ENGINEERING RAILROADS AND THE WOOD SUPPLY

May 14, 1973

RAILWAY AGE

Metroliner gets spruced up for a Corridor run

RN73 7
JAMES P CHEW
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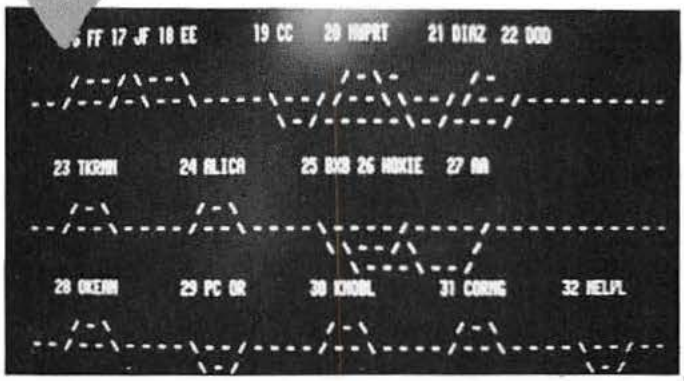
AMTRAK: "The beginning has begun"

Traffic expediters...by GRS



Centralized Traffic Control

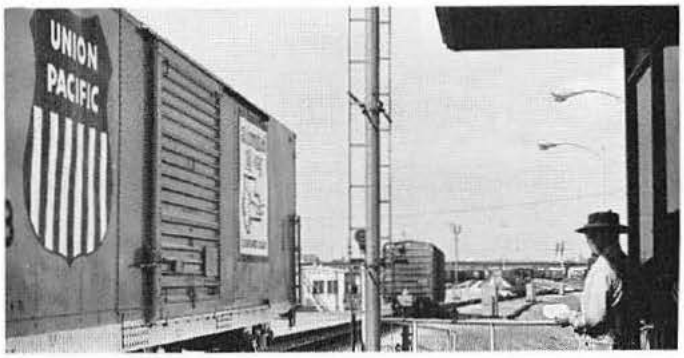
The latest GRS development is computerized video CTC, called Traffic Master II™. It combines the principles of pushbutton control with the capabilities of a digital computer. Cathode ray tube (CRT) displays replace the usual track diagram, while a compact keyboard replaces the former pushbuttons. One or more CRT's show the overall track diagram of the controlled territory – and display field conditions. The operator uses the keyboard to call up an enlarged track plan of a selected siding on a separate CRT, and to initiate controls to the field via the computer.

Rapid Transit

The Washington Metropolitan Area Transit Authority selected GRS to supply the automatic train control system for the first 36 miles, of an eventual 98 miles, of rapid transit to serve Washington, D.C., and suburbs in Maryland and Virginia. The installation involves automatic equipment for 37 passenger stations and onboard equipment for 300 cars. With the fully automated system, trains will move up to 75 mph, operating 90 seconds apart during rush hours – without human intervention.

Personal Transit

The personal Transit – or people mover – system is a new concept in mass transit. It is characterized by a large number of small vehicles, closely spaced. GRS is supplying LTV Aerospace Corporation with the fully automatic vehicle operation system for the AIRTRANS personal transit system which will serve the Dallas/Fort Worth Regional Airport. The initial phase will include some 45 stations, approximately 12 miles of controlled guideway, and about 70 driverless vehicles.



Yards

The GRS Distributed Computer System utilizes minicomputers to control all phases of car classification. DCS is a completely modular, plug-coupled, interface system designed to work in conjunction with the minicomputer. The interface and associated minicomputer accomplish one specific piece of process control or subsystem function. The modules may be used in a new yard installation, or they may be applied to the upgrading of existing yards a function at a time over an extended period of modernization.

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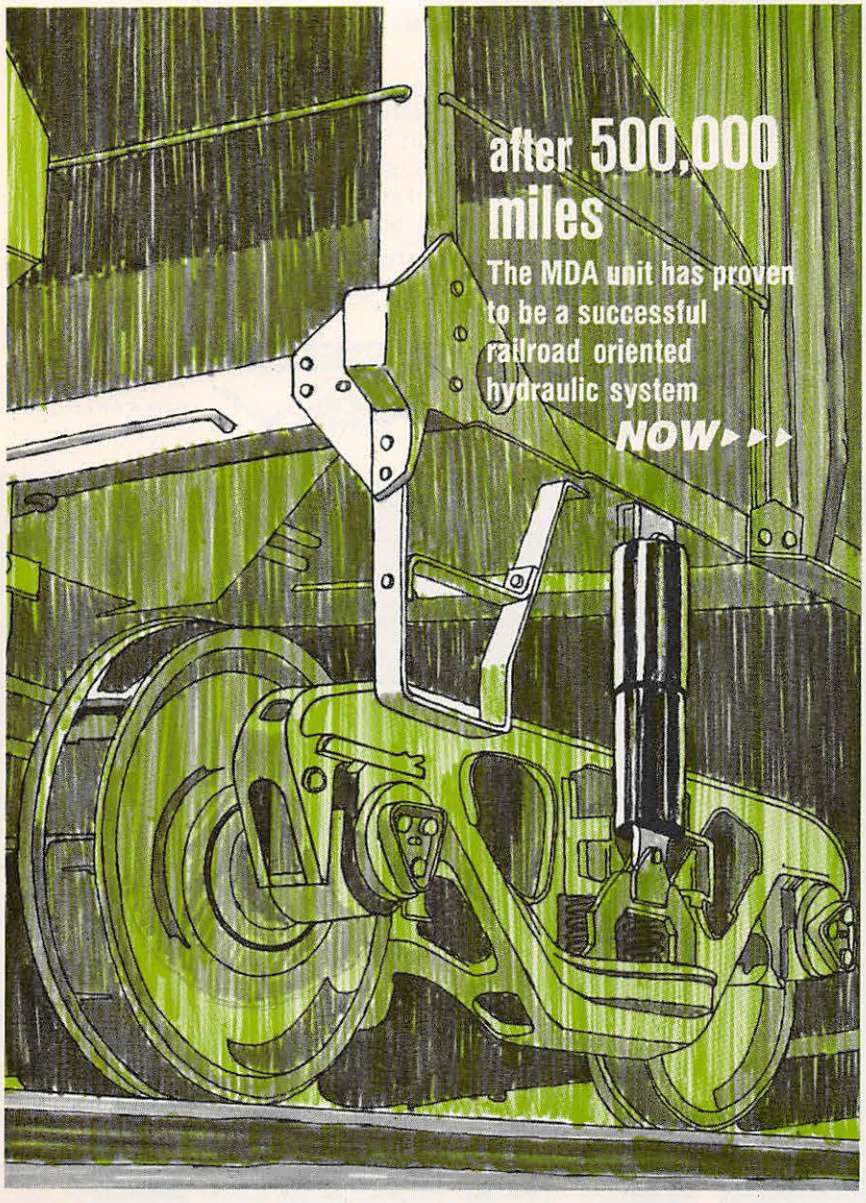
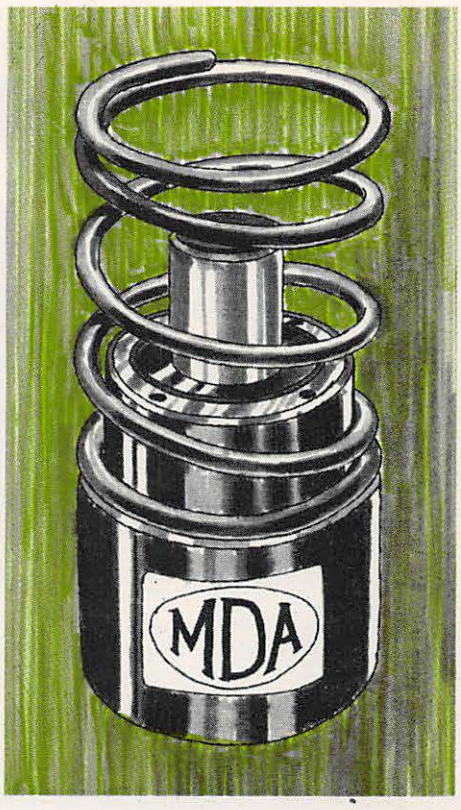
INNOVATION THROUGH IMAGINATION



With this established design and operation experience, Railroad Dynamics introduces the MDA Control/Master unit, an alternate means of introducing hydraulic damping into the freight car.



...solution to the overall freight car vibration problem

The MDA Control/Master unit is a single acting, hydraulic damping system, operating in compression only, which is placed directly in the center of the truck spring group, replacing the spring combination at that location, making its presence on the car nonapparent. This newest version of the MDA concept, being the same size as an outer coil truck spring, requires no physical attachment to either the side frame or bolster, and therefore, it can be applied as simply as a truck spring.

MDA

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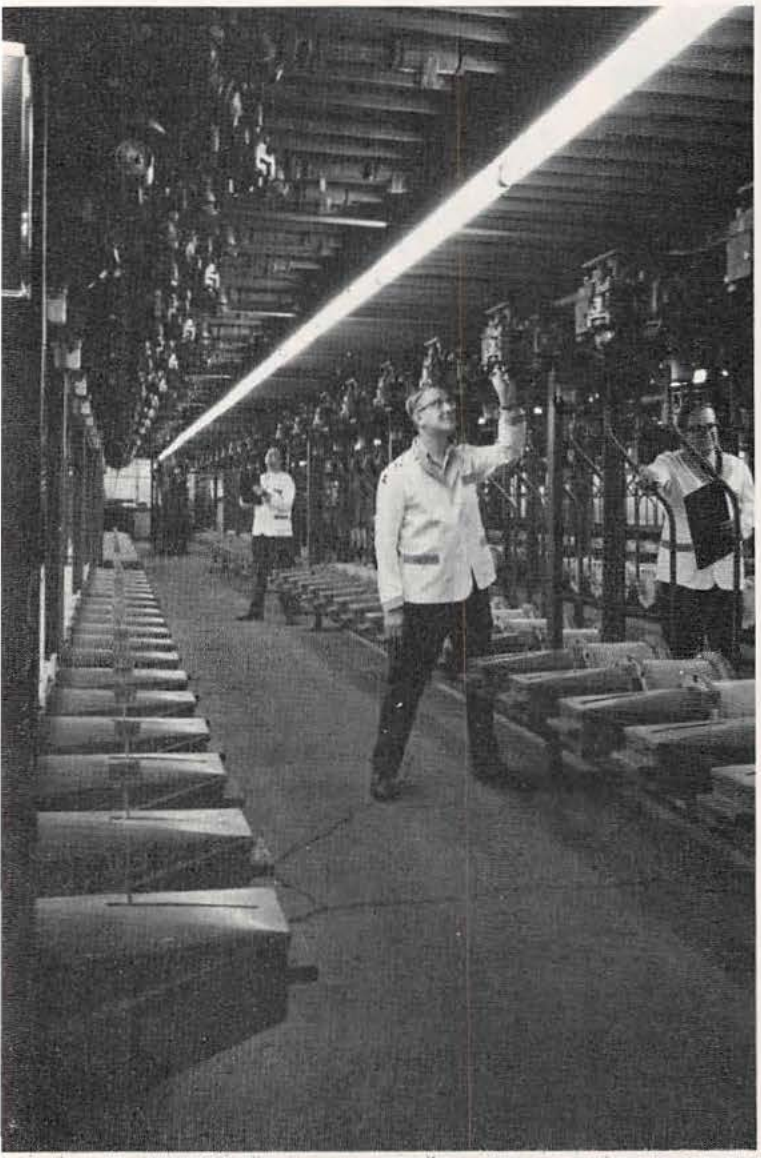

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Inside

LUTHER MILLER

THE PURCHASING MAN'S DILEMMA

The question facing railroad purchasing men today is not only "Can we afford it?" Increasingly, it's "Can we get it?" Both problems—rising prices everywhere, and declining availability in some instances—will come in for considerable attention, on and off the record, during the TMMF/RPI seminar in St. Louis May 9-11 (p. 18).

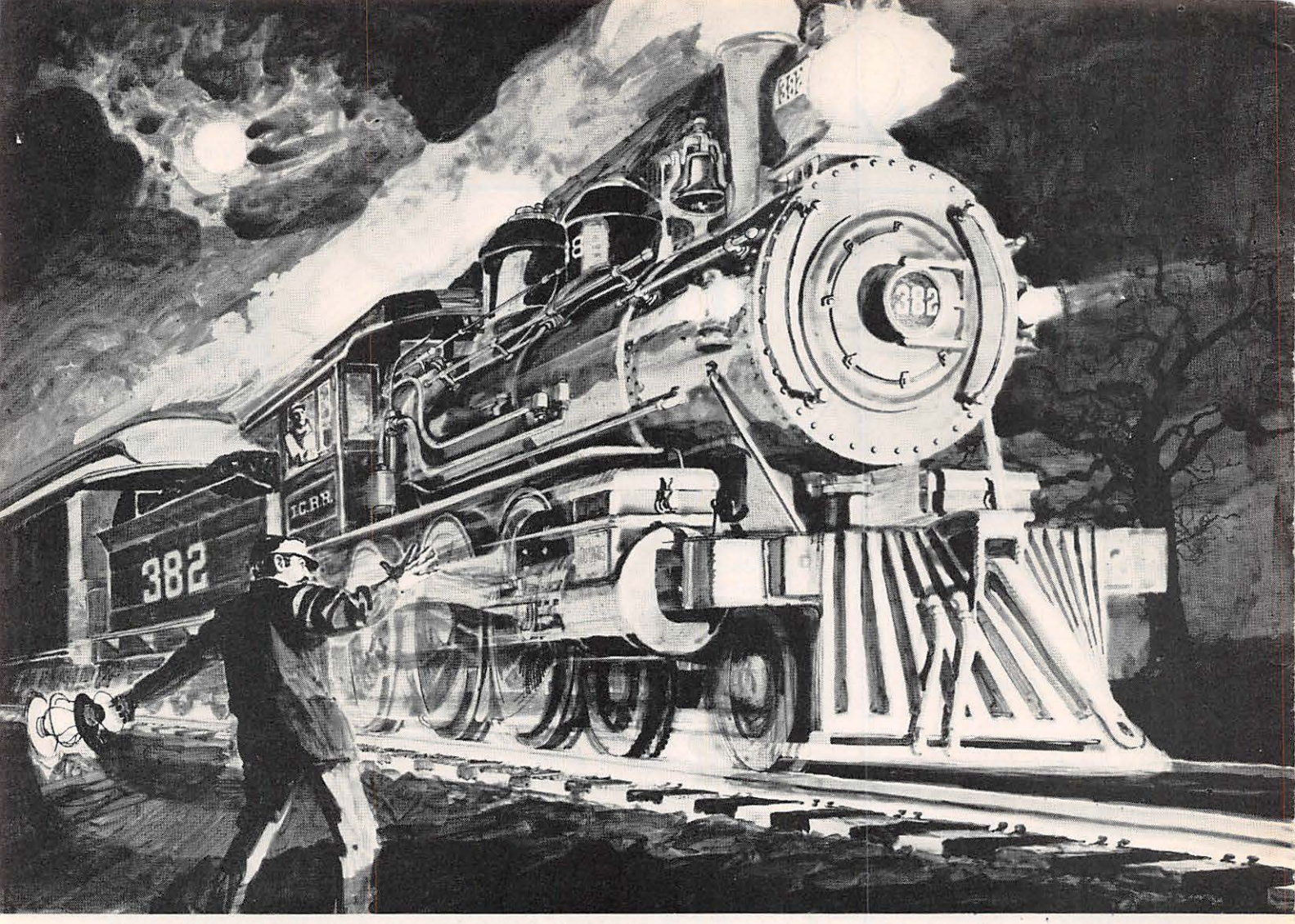
While the shortage of fuel poses the most perplexing problem at the moment, there's another shortage that could have even graver implications over the long term—and it's dealt with by Engineering Editor Merwin H. Dick in his article, "Wood and the railroad industry: Can demand be tailored to fit supply?" which begins on p. 24.

Railroads are concerned by rising wood prices: "Because of the increasing demand for lumber for domestic use and export, the railroads find themselves in competition with other users of wood in bidding for available supplies. Higher prices for ties and bridge timbers are, therefore, inevitable." The price of wood ties has gone up about 15% in the last year alone.

But there is even greater concern about the available supply of wood. "Short-range, there isn't much that can be done about the predicament," reports Merwin. Long-range, the story may be different. What can be done—and what is being done—to stretch the available supplies is described in this thoughtful and provocative piece.

AMTRAK—AND THE NORTHEAST CORRIDOR

Amtrak's performance so far, and its prospects for both the immediate and the distant future, are the subject of the cover story beginning on p. 34 and editorial comment on p. 54. One major subject *not* dealt with in these pages—because it is, quite frankly, a subject which Amtrak officers would rather not discuss at this point—is the Penn Central crisis, and how its resolution might affect the future of the National Railroad Passenger Corp. The question, specifically, is: What will happen to PC's Northeast Corridor lines between Washington and Boston? Clearly this is of considerable importance to Amtrak, since these are predominantly passenger-train lines. Right now the thinking is that the Federal government will probably end up either buying or leasing them. Whatever this might mean for Penn Central, it would probably be a good thing for Amtrak, because it would mean the investment of several hundreds of millions of dollars in this busiest and most profitable of all Amtrak routes. Right now Amtrak President Roger Lewis will say only: "Anybody who thinks about this thing realizes that the Corridor is central to Amtrak. I just don't see how the Penn Central situation can be dealt with without a solution to the Corridor problem." But for the moment, at least, he's leaving specific proposals up to the DOT, Congress, and other interested parties.



Remember the Cannonball Special?

During the two brief months that Casey Jones mounted the cab of engine No. 382, the Cannonball Special became a legend in its own time. With Casey at the throttle and 21,922 pounds of traction from her six massive 69-inch drivers, she roared to a reputation as one of the Illinois Central's fastest passenger trains.

On a foggy April morning in 1900 she smashed into the last four cars of a freight in a wreck immortalized by the folk song. After the wreck, which took Casey's life, she was rebuilt and continued her famous career until 1935. Then she chuffed into history with Casey.

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RAILWAY AGE

MAY 14, 1973

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COVER

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Short and Significant

FIRST-QUARTER TON-MILES SET A RECORD

U.S. railroads carried an estimated 204 billion ton-miles of freight during the first 13 weeks of 1973. That, reports the AAR, was an all-time high for a single quarter in any year. The new record topped the previous high of 202 billion ton-miles, set in the fourth 1972 quarter. (Last year, a one-year record for freight tonnage hauled was established: 778 billion ton-miles.) A 40.3% increase in the number of cars loaded with grain in the first 1973 quarter helped lead the way to the new quarterly record, says the AAR. In 1972 299,520 cars of grain were loaded in the first quarter; the figure rose to 420,264 in 1973. In addition, 15 of the 21 reported commodity groups showed increased carloadings over the first 1972 quarter. The largest of the 21 groups, coal, dropped 5.5% during the first quarter.

BN SEES ANOTHER RECORD GRAIN YEAR

Current forecasts indicate that Burlington Northern 1973 grain traffic will climb to "at least 340,000 carloads, which is 10.4% above the record year of 1972 and 23% over 1971 figures." Projections, BN says, are based on current export demands, not on reports that the USSR is expected to buy sizable additional quantities of grain in the second half.

BROOKLYN JOINS THE NATION'S RAILROADS

The waterfront terminals of New York City's Borough of Brooklyn now have their first commercial rail link with the nation's continental railroad network. Before, the terminals had dispatched and received their rail cars by barges connecting with New Jersey. Some 500 feet of new track was all that was needed to connect existing tracks and form the 30-mile freight route, which was inaugurated in mid-April. The route goes across Brooklyn and the borough of Queens to the Hell Gate Bridge and a tie-in with railroad lines to New England and the West. It has been predicted that the rail line will remove 20,000 trucks from the city streets.

PROJECT SET UP FOR NEW CAR DESIGNS

Washington University has received a one-year, $84,000 contract from the U.S. Department of Transportation to work with ACF Industries on development of advanced design techniques for rail transportation vehicles. Contract renewal for an additional year depends upon availability of DOT funds. The university research will be coupled with developmental work by ACF's Amcar Division. ACF's contribution of services and facilities to the project will total about $200,000 over the two-year period. The AAR will contribute an additional $25,000 to the project this year. The project calls for developing a mathematical model for stress analysis of stiffened structural plates and shells, with particular reference to problems encountered in design of rail transportation vehicles. The new computational technique will be applied to specific problems. Results will be compared with test data.

A.H. SMITH, KERITE EX-PRESIDENT, DIES

Arthur H. Smith, a distinguished figure in the railway supply industry for nearly 40 years, died April 20 at St. John's Hospital, Smithtown, L.I., at the age of 78. Smith joined the Kerite Co. as a sales representative in 1934 and retired as president of that company on Nov. 30, 1966. He was serving at that time as chairman of the Railway Progress Institute. He subsequently served as executive director and secretary-treasurer of the Railway Signal and Communications Suppliers Association.

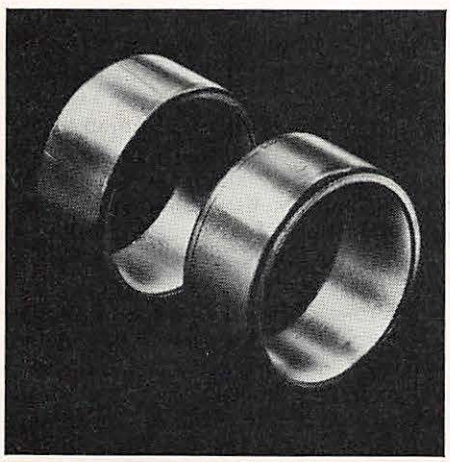
CAR ORDERS DOUBLE 1972 PACE

The backlog of undelivered new cars continued to rise through March as a total of 5,484 cars were ordered (all but 51 from commercial shops), and 5,157 were delivered. The backlog was 27,076 on April 1, 1973, up from 26,749 on March 1 and from 20,300 on April 1, 1972. In the first quarter of 1973, according to the AAR, railroads and private owners ordered 20,720 new cars, compared with 9,567 in the comparable 1972 period.

SP-ROSEVILLE RECOVERS QUICKLY

Southern Pacific's Roseville, Calif., yard, badly damaged April 28 in an explosion of bomb-laden box cars, had operations as usual by the May 5 weekend—after being able to maintain traffic through and around the yard for much of the period following the blast. Eighteen of 21 munitions cars—loaded with 250-pound fragmentation bombs—blew; courageous SP personnel pulled the three other cars to safety, thus preventing a worse disaster. SP then went to work fighting the blast-produced fires, so that military personnel could come in and remove remaining unexploded bombs. About 50 persons (including 12 SP employees) were injured, none critically. Damage in the yard alone is estimated at up to $6 million; 120 freight cars were demolished and about 100 others damaged; track damage was generally limited to the receiving-track area, and the yard's sophisticated control system was not affected.

Let's get down to facts



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MEMBER RPI

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RAILWAY AGE
NEWS

Lingering floodwaters plague railroads

To railroads operating in and around the Mississippi River valley, the "father of waters" is once again turning out to be a dirty—and destructive—old man.

Since about mid-March, the river and its tributaries have been acting up—and while the worst may now be over, there's no guarantee that more flooding will not take place between now and the end of May. Heavy early-May rains, especially in Iowa and northern Illinois, were causing forecasters to take another look at prospects for such points as Quincy, Hannibal, St. Louis and on down-river.

The 1973 flood has been a record-breaker—and it has created situations not common to the Mississippi's past patterns. For one thing, probably because of less-than-normal snow cover and comparatively little rain, the nothern stretches of the river have created few problems. Milwaukee Road, for instance, has gotten used to battling the river between LaCrosse, Wis., and the Twin Cities. But this year, Milwaukee has had little trouble in that area.

Down-river, however, washouts, slides and just plain flooding have plagued most railroads, and the nature of the Mississippi's action has made cleanup and restoration of service tougher than usual. One reason: this has been a slow flood—comparatively slow to build to crest and even slower backing away from crest. Where serious line breaks have occurred, it is taking longer to get operations rolling again. One case in point: Frisco, perhaps the hardest-hit of any Midwest carrier.

As a result of "some of the worst weather in the history of the Midwest," Frisco President Richard C. Grayson says, service has been interrupted, sometimes for long periods, over major segments of line. Frisco's St. Louis-Memphis line, for example, was out of service from March 13 to March 26, went back into service for 40 hours, and then went out again. It was still out as of early May. Farther south, Frisco operations were shut down between Memphis and Birmingham for five days. Mobile was cut off for 11 days, Pensacola for nine days. At one point, Grayson notes, "we had as many as 62 trains held back at various points."

By contrast, Missouri Pacific was counting itself as fortunate and, in fact, was serving as a detour route for at least four other flood-plagued roads. MoPac was having trouble around Cairo, Ill., and Cape Girardeau, Mo. It had a line to Kansas City under about 10 feet of water, but was able to run around the trouble spot.

Katy was also reporting problems in the St. Louis-St. Charles area; over-all, Katy had had as much as 38 miles of line under water. And water was causing more trouble for the many railroad yard operations on the east side of the Mississippi at St. Louis.

Among the roads less handicapped, at least as of early May, were such as Chicago & North Western, Kansas City Southern/Louisiana & Arkansas (though floodways did have to be opened under track at two points), Norfolk & Western and Rock Island (though RI had been having detour problems in Iowa).

> Slow to crest, and slower to recede, the spring floods have broken all records.

NW's principal problem appeared to be in Illinois and Missouri, with heavy washouts, slides and water running deep over track at several points. Maintenance forces were throwing sandbags and stone into a battle to keep open a detour route into Kansas City.

Burlington Northern's line between Burlington, Iowa, and St. Louis was about 75% under water. Yards at Hannibal and West Quincy were also under water—and, although St. Louis-area yards were okay, BN had had to reroute trains between St. Louis and such points as Lincoln, Denver, Kansas City, Galesburg, as well as Chicago-Kansas City trains.

Through it all, railroad men were fighting back with a combination of long hours and hard work, a lot of money—and a dash of fatalism, born of past struggles with the mighty Mississippi. Talking of troubles in the Cape Girardeau area, one railroad spokesman noted that "we haven't been able to get in there for weeks—but then, nobody else can get in either." Summing up his road's problems, another railroader observed that "well, the whole railroad is kind of wet." Still another railroad man described the confluence of the Mississippi and the Missouri: "It's been a big wake for weeks."

As usual, trouble spots moved around—keeping railroad forces moving, because as fast as repairs could be made at one point they were needed at another. Early on, for example, Illinois Central Gulf had problems in Mississippi, with lines cut at several key locations. On March 20, it had just one line open south out of Memphis; one line, reopened after flooding, was out again because of a derailment. A day later, the situation in Mississippi was much improved, but, less than a week later, more heavy rains hit. ICG's Vicksburg District was out briefly. Maintenance personnel was struggling to keep one main track open south of Cairo. The Hammond District went out for two days. At the end of March, ICG was still working south of Cairo: "About a half mile of track was washed out by waves from the Ohio River so strong that they swept a river barge onto the track." ICG figured it would need something like 130 cars of riprap to get the track back into service. Next hit was the former Gulf, Mobile & Ohio line south of Cairo, victim of end-of-March weekend rains. Then came a respite—which lasted all the way to April 23, when the rains came again, and knocked out the former GM&O line to Kansas City at the point where the line crosses the Mississippi. Finally, on April 25, the river crested at the river crossing and by April 30 ICG had the Kansas City route open again. But in the meantime, there were more problems at Vicksburg, where Army engineers feared they would have to close floodgates to protect the city. As it turned out, that action wasn't necessary.

With the flood-fight still going on, there is no estimate of what this spring may eventually cost the railroads. But the impact is already being felt. Consider again Frisco: on record-high first-quarter revenues per-share earnings went down a dime. Normal expenses were also way up—but Frisco was specific in noting that '73 earnings "reflect the devastating floods which struck beginning in March."

Water above, water below: An ICG case history

It was only a single microwave facility out in the boondocks of Mississippi, 75 miles from Jackson and 200 miles from Memphis. But, if for any reason that single facility went out of service, Illinois Central Gulf would have lost about 25% of its teleprocessing capacity. And, shortly before midnight on March 15, "any reason" became the Tallahatchie River, swollen by heavy rains and spillover from the Mississippi. MAIN Central in Chicago got a low-voltage alarm, indicating a loss of prime power. Immediately, ICG communication forces out of Jackson got to work. What followed was a prime example of that oft-talked-about railroadman's dedication to the railroad. For almost three weeks, ICG people maintained a round-the-clock vigil, sandbagging and pumping and using every other trick they could think of to keep communications open. And they beat the rampaging river: maximum outage of the facility was three hours. This is what happened at Sidon, Miss., between March 15 and April 3—and it's not untypical of efforts made by railroad men throughout the nation's midsection as the Mississippi and its tributaries ran wild.

March 15—11:15 p.m., MAIN Central receives alarm. Communications forces sent to Sidon with standby generator and battery charger.

March 16—6:30 a.m., inspection of microwave building shows water up in "B" power supplies and battery charger and rising. Arrangements made to obtain boat, pump, sand and bags. 12:30 p.m., forces gathered at Greenwood, Miss., leave for Sidon with emergency generator, cable and other material. 2:30 p.m., sandbagging begins. Late afternoon, power plant at about 40 volts, "A" equipment fails due to low voltage, system fails. 9:00 p.m., emergency cable found to be good, hookups made and system made good with emergency generator and spare battery charger from trackside.

March 17—morning, water coming in too fast to bail by hand. With railroad pump not working properly and borrowed pump recalled, rented pump installed and building pumped out to safe level. Sandbagging continued, water still rising. "B" power supply equipment removed. 11:30 p.m., building tilts and begins to float off foundation. Midnight to 4 a.m., crew bails water back into building and adds sandbags to stabilize structure. Water 2½ ft deep outside building and rising.

March 18—sandbagging continued, water still rising, but level in building under control. Slow order on trains (10 mph) instituted to reduce building vibration.

March 19—morning, water still rising. Report notes that "we realized we would be here for quite a spell." Plans made to maintain vigil in shifts with technician and lineman on duty at all times. Temporary shelter set up and base radio equipment installed. Water now so deep between track and building that men working in boat had to don life preservers.

March 20—water still rising, but under control. Facility still under emergency power, but power company asked to provide service to trackside. Slow order raised to 25 mph but then dropped again, account vibration on building.

March 21—outside power provided and emergency generator relieved. Report notes "much quieter in area." Water still rising. Now up to within 15 inches of top of plywood used to shore up door area of building. Crews begin to shore up inside of building with cross bracing to prevent walls from collapsing.

March 22-23—water rising but under control. Weather reports forecast rain, up to 3 inches.

March 24—morning, report notes "wind very strong and skies very dark and threatening." Rain begins. 12:15 p.m., system took surge on power line and lost a.c. 1:30 p.m., service restored. Wind blows down shelter. Wind also creates waves. Whitecapping at up to two ft in area of microwave building. Decision made to add more weight to building. It can't be done because wind and wave conditions make use of boat too hazardous. Wind gusting up to 70 mph. Late afternoon, extra linemen called and day crew returned to site. Angle bars, four sacks of rail anchors, and all available sand bags added to building for weight. Decision made to remove all available equipment from building if it appeared building would flood. Total day's rainfall, 1.7 inches, total water rise about 2 inches.

March 25—situation stable. Current at trestle near site appears to have reversed. 6 p.m., report notes "water moving out under trestle faster now and it appears river has finally crested and water in area is beginning to drop."

March 26-27-28—situation stable, water level dropping.

March 29—water rising again after 1-in. rainfall to about 2 in. below previous high-water mark. Afternoon, water begins to recede again. Water appears to be seeping into building more slowly, perhaps due to swelling of building, and shifting and settling of sandbags. Periods between pumping first extended March 25, extended again.

March 30—situation still stable, but weather reports forecast rain and possible flash flooding for all of Mississippi.

March 31—weather forecast proved wrong. half-inch of rain fell, but water level still dropping slowly.

April 1-2-3—situation stable. Decision made to discontinue 24-hour watch, with arrangements for technician and lineman to stay in area. Building now requires pumping only twice a day at most.

April 4—ICG breaks camp at Sidon.

At the end of April the area was still flooded. But, the worst did appear to be over. And, as one ICG supervisor summed it up, "This whole engineering operation was carried out in a very expeditious manner. Every man involved should be commended for his devotion to duty as shown by endless hours of work, without a single complaint from those involved."

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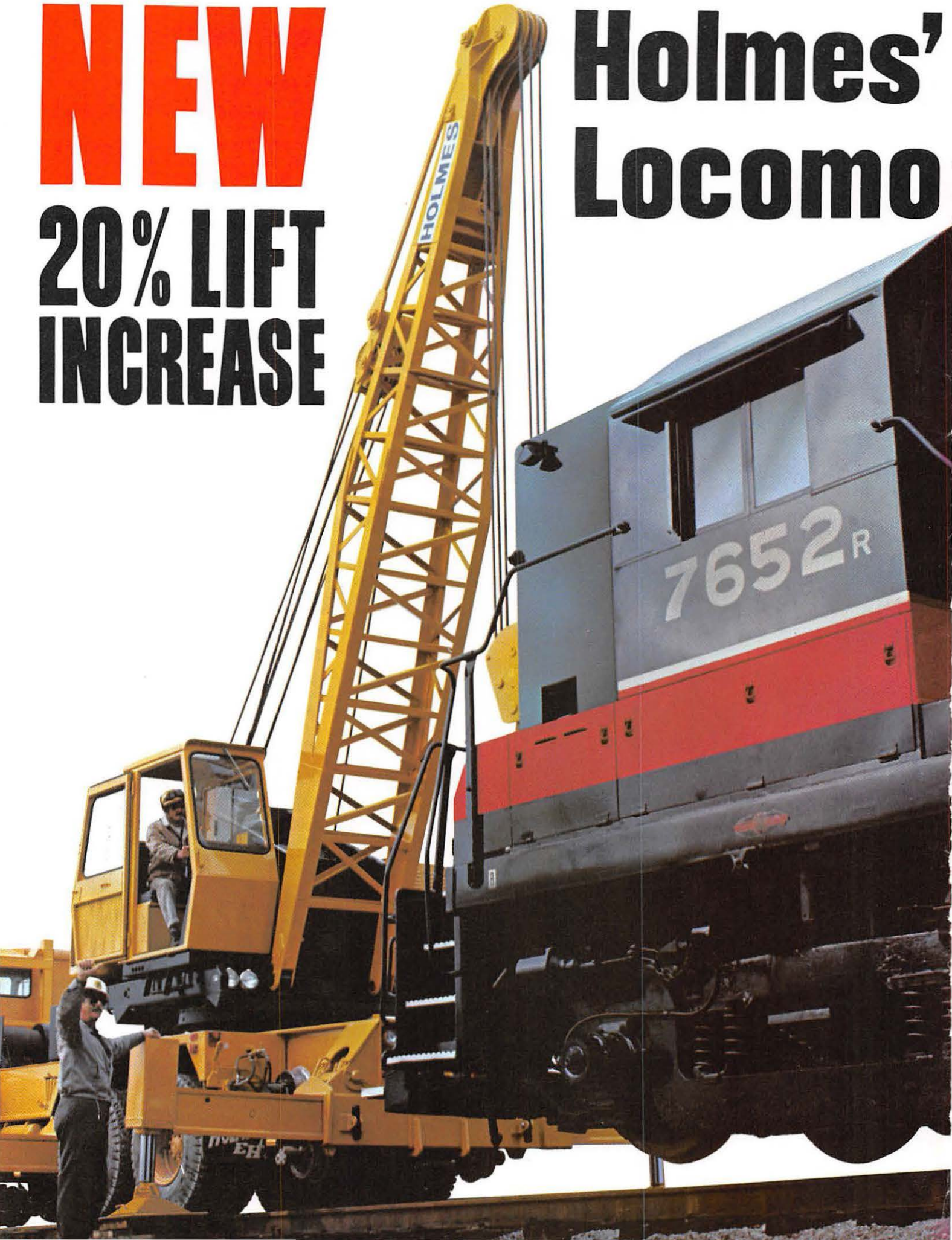

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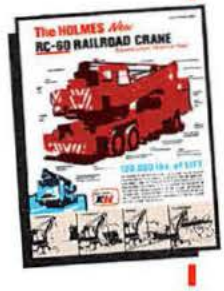

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Lines on Labor

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UP: "P" IS FOR PEOPLE

In a word-association test, if you mentioned to the average railroad man the two words "Union Pacific," you'd probably get back something like "Gold Spike" or "big locomotives" or "technology" or "money" or something like that. But if UP follows through on what it has started, someday you might just mention "Union Pacific" and get back "people." On the outside, UP's current advertising campaign is built around UP people. And on the inside UP is moving in a number of different directions at once to make a better and more tightly-knit organization out of 9,500 miles of railroad and 27,000 people. Why? UP President John C. Kenefick puts it simply: "Union Pacific people literally *are* Union Pacific Railroad. What they do, or do not do, represents the total activity of our company."

THOUGHTFUL QUESTIONS GET THOUGHTFUL ANSWERS

In any company—and especially in an enterprise as far-flung as a major railroad—there's a temptation, in thinking about employee relations, to generalize, to over-simplify, to make judgments based on something less than all the facts. Union Pacific, however, has a pretty good data bank to build its judgments from—and well it should, because during the second half of last year UP invested a fair-sized chunk of money in a comprehensive employee-attitude survey in which about 4,400 people were queried about such things as company policies, working conditions, supervision, training, communications. The results were interesting, and not entirely predictable.

Briefly, UP found that its people (1) have great pride in the company, (2) don't regard themselves as underpaid, (3) regard their jobs as worthwhile and important, and (4) consider their immediate supervisors as adequately-trained and generally fair in dealings with subordinates. At the same time, employees (1) pointed out areas where operations were not as efficient as they might be, (2) expressed concern about quantity and quality in training programs, (3) pointed out soft spots in the communications process, (4) prodded the company on programs providing for development of personnel and promotion from within the organization, and (5) suggested that supervisors be a bit more free with recognition for jobs well done. More than 80% of the people queried indicated that they get their first word on important developments through the grapevine—though most also agreed that much of what falls off the vine is inaccurate. And then came the answers that stung: As John Kenefick says, "An overwhelming majority of the employees thought the survey was a good idea—but most of them felt nothing was ever going to be done about it."

AND THE ANSWERS ARE GETTING ACTION

Well, the doubters should be starting to realize that they guessed wrong. Employees asked for a better accident-prevention program. They're getting it. Employees wanted improvement in communications. UP is making a first step, with informal local meetings between operating management and union representatives. Employees asked for better training programs. UP has begun some and is working on others. Hardware? Sure, it's important. But, Kenefick notes, "As one of our recent ads said, 'Anybody can buy a box car.' It's what people do with the box car that counts."

Railroads seek 5% increase

All major railroads except the Chessie System and the Long Island have joined in petitioning the ICC for a general 5% rate increase. If approved and fully applied, the increase would yield $619 million in extra annual revenues—$220 million in the East, $108 million in the South, and $291 million in the West. Shipments of recyclable goods would be exempt from the increase.

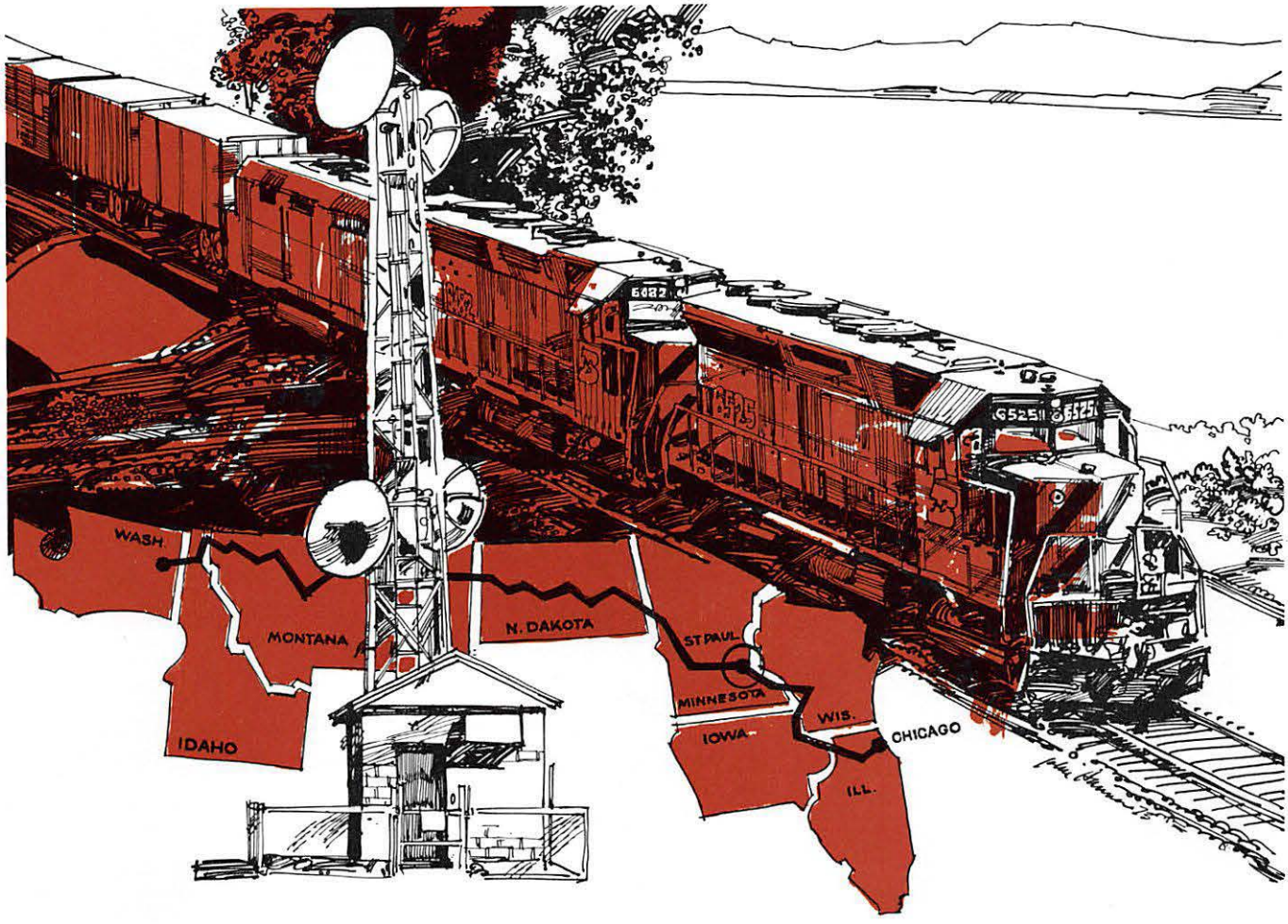
W. Graham Claytor Jr., president of the prosperous Southern System, told the ICC that all railroads "are faced with the absolute necessity to modernize and improve their physical plants to serve the nations's rapidly growing economy. . .We must, if we are to remain viable, be in position to meet those demands and the only way that can be done is with increased revenues and increased cash flow. . .Without the additional revenues, all railroads. . .are going to have to defer or prune programs and if that becomes necessary, service will most certainly suffer. It will certainly not improve."

John F. Nash, trustee and chief operating officer of the Lehigh Valley, one of six eastern carriers in reorganization, said, "It is far from certain at this writing that the Lehigh Valley Railroad is going to escape liquidation. Conceivably, this increase might just make the difference. In view of wage and other cost increases, this proposed 5% is now indispensable."

William F. Betts, the AAR's vice president of economics and finance, said in a statement accompanying the railroads' petition that since the last rate increase in 1972 cost escalations have amounted to $930 million. Of that amount, wage increases that became effective on and after Oct. 1, 1972, account for $638 million. Higher payroll taxes have added $124 million to costs; increases in fuel, materials and supplies amount to $98 million. Other cost increases, including depreciation and retirements, state and local taxes, equipment rents and fixed and contingent charges come to $80 million.

R.R. Manion, AAR vice president of operations and maintenance, said in another statement the "denial or delay of these increases will definitely impair the ability of. . .railroads to offer safe, adequate and efficient service."

Manion said that preparing for this year's level of traffic would have required between 75,000 and 100,000 more covered hopper and box cars than were bought last year and would have cost the railroads between $1.5 billion and $2 billion. The rate increase, he said, can help close the gap.



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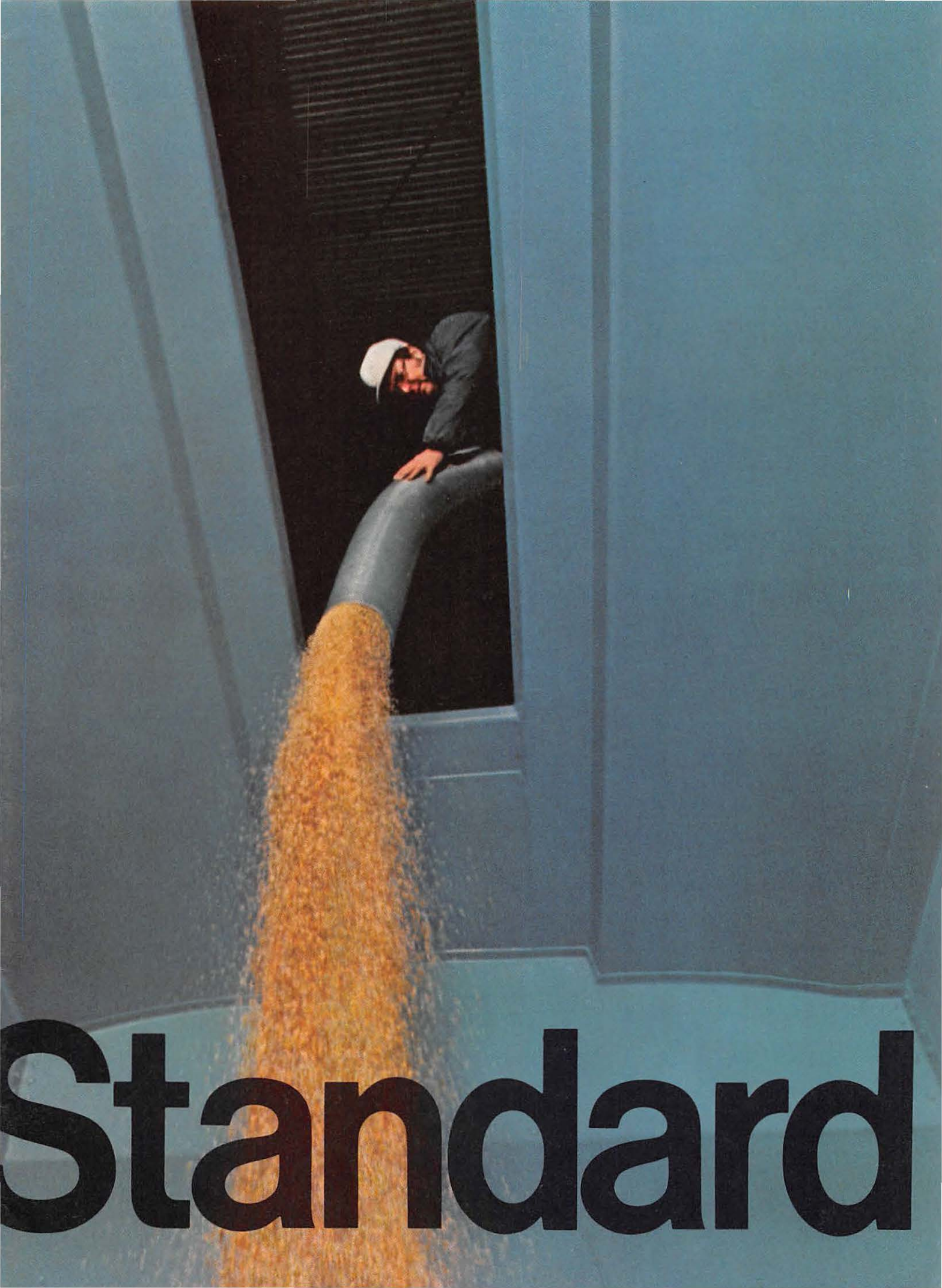


Standard

P&MM problem: Availability, not price alone

Railroad purchasing and materials management officers and railway supply company representatives—400 of them, and maybe more—will be meeting in joint sessions in St. Louis, May 9-11. It should be a lively time: seldom have P&MM people and suppliers had more to talk about; seldom have their individual and collective problems been greater.

The Transportation Materials Management Forum and the Railway Progress Institute are co-sponsors of the seminar—and, while the "standard" problems of buying and selling will be up for discussion, there may be a few new twists, too. Or, there will be if railroad and supply-company people really come to grips with today's most critical problems.

A quick glance at available railroad purchasing statistics would seem to indicate that (1) railroad purchasing officers are doing a good job of getting top production from the dollar, and (2) suppliers have somehow managed to keep prices under rein. Over the 1967-1972 period, for example, fuel and material prices have indeed gone up. On a basis of 1967 = 100, the fuel index last year stood at 117.0, the price index on other material hit 118.7 and the combined index was an even 118.0—but during the same period, the consumer price index rose to 125.3. And the wage index for the railroad industry really took off, hitting 151.4 in '72.

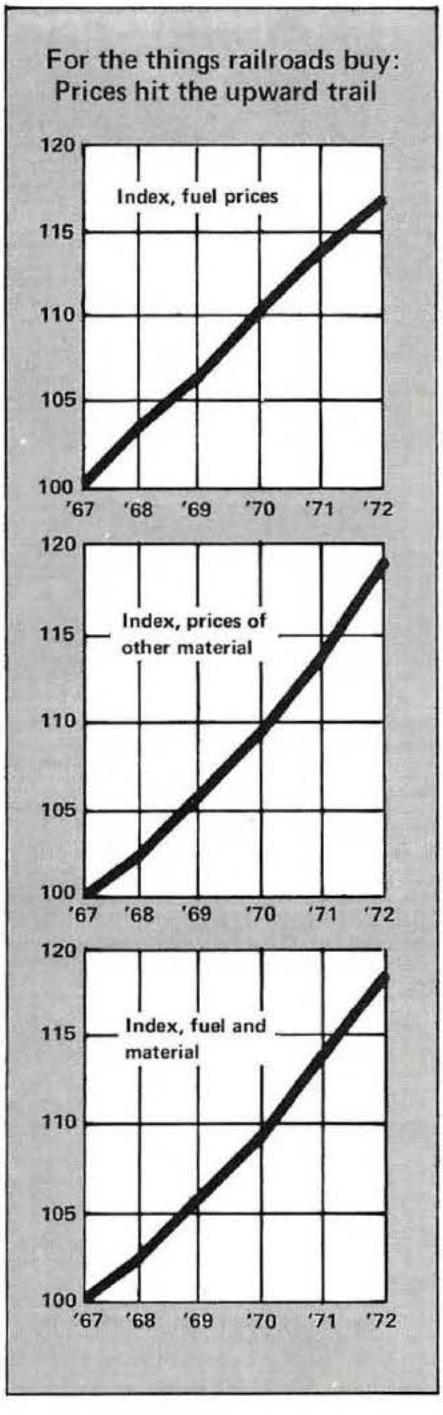
● **Not how much, but how soon.** More and more, however, purchasing officers will say—publicly or privately—that price isn't the real problem. The real problem is the availability of the product—and it's getting to be an across-the-board problem.

It would seem a safe bet that the one word that will be heard most at the TMMF/RPI seminar will be a four-letter word: fuel. This is the shortage that has been most critical, the pinch that squeezes tightest. But purchasing officers are increasingly concerned about the availability of such materials as steel and lumber, and lengthening delivery schedules on these and other materials.

All of this, of course, is reflected in the problems the industry is having right now in moving all the freight that's there to be moved—and in getting more new and rebuilt freight cars into service to ease current shortages. Covered hopper cars are being ordered at a record pace; at Butler, Pa., for example, Pullman-Standard is turning them out at a rate of about 45 cars a day.

But supply hasn't caught up to demand, and covered hoppers aren't the only type of car on which the buyer will have a wait. A western road recently placed substantial orders for box cars with two builders—with delivery scheduled to begin in September and October. A purchasing officer for another western road notes that recent inquiries indicate that if you're talking box cars, you're talking fourth-quarter—and if you're talking covered hopper cars, you're talking 1974.

And, while there are material-supply problems, there are also problems of production capacity. It hasn't helped that one major builder has been shut down by labor trouble. But far beyond that, it hasn't helped that railroad equipment buying has gone through wild gyrations in the past decade or so. In 1962, for instance, railroads installed less than 40,000 freight cars, and builders were hurting. From that point, everything went up, and installations topped 100,000 in both 1966 and 1967. But then the market started coming apart again, to the point where 1972 installations dropped to around 50,000. In the mid-1960s, car-production facilities were expanded and new people came into the business. But then came the fallout, and it wasn't pleasant to behold. Nor did it leave the builders, as an industry, fully prepared—in terms of facilities and skilled manpower—for the order surge that has now taken place. And it eventually comes down to a basic problem that railroads and suppliers have been unable to solve: so long as railroads practice—or *have* to practice—peak-and-valley buying, there is no way the carbuilding industry can function smoothly, no way to have instant capacity for the peaks without going broke during the valley periods.



This is true of something as sophisticated as a freight car, or as common as a crosstie. And with crossties, too, there are definite problems in the availability area: only twice in the past 15 years have installations topped 20 million, in 1971 and 1972; but service-life estimates indicate that railroads ought to be inserting about 30 million ties annually. And the question is, if railroads had the financial capability to do the job, could they quickly get the additional equipment required—and, maybe most important, could they get the ties?

● **Buying costs, selling costs.** Discussion of feast-and-famine purchasing isn't on the TMMF/RPI program as such—but it would be surprising if the subject doesn't come up, perhaps in the workshop sessions which are planned. Two series of workshops will be held, on the over-all theme of true costs of purchase and sale. One series will look at the subject from the standpoint of the obvious costs; the other will probe the hidden costs, and it's there that peak-and-valley buying may get a going over—since the problems of trying to play catch-up would seem to constitute a definite hidden cost.

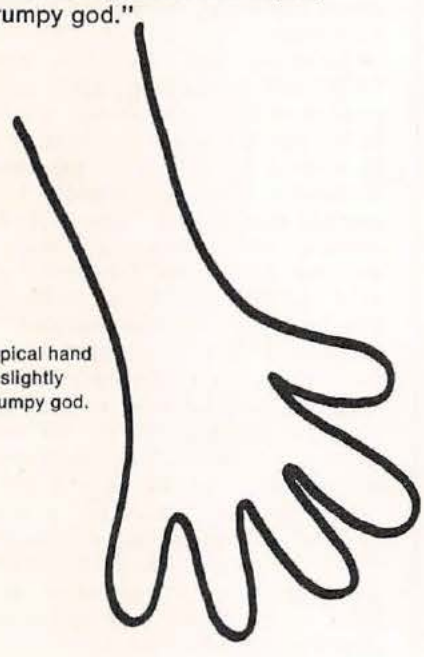
The energy crunch *is* on the program at one point—but with everything that has happened in the past several months, energy may also be a prime conversational topic when purchasing people get together with other purchasing people and suppliers outside the confines of the meeting rooms.

Since late last year, the fuel crisis has been with the industry—and the na-

Petroleum and You (A History of the Former)

Chapter One: Dawn of an Era

Man's first encounter with petroleum harks back to ancient times when cavemen came upon pools of crude oil which had seeped to the surface due to underground pressures. At first this was interpreted to be a sign that the gods were angry, yet when compared with such events as erupting volcanoes it seemed to many that "angry" was perhaps too extreme a term. Further study of the matter eventually led to the philosophy expressed in the thought "we are all sinners in the hand of a slightly grumpy god."



Typical hand of slightly grumpy god.

Whatever the case, the appearance of these petroleum pools brought about a profound schism among cavemen of the period. One group looked upon the seepage as some sort of mistake and wanted to get it back to wherever it had come from as soon as possible. On the other hand, a second group saw it as an omen, yet whether it boded well or ill they could not say since the whole subject of boding was at that time relatively unexplored. Nonetheless, one turns to this second group for the first touchingly awkward attempts of man to find a use for petroleum. A tribe from the frigid northernmost regions tried to wear it, but with little real success.

Early misguided attempt to fashion undershirt from petroleum.

Another tribe from the more cultured central regions were wont of an evening to gather at the hearth of the eldest tribesman and listen as he attempted to pluck simple melodies from petroleum. The results, though diverting, fell far short of their hopes.

Then, just when the advocates of petroleum were on the verge of despair, two amazing advances occurred. An early tribe settled along the early Nile learned that judicious use of pitch, a crude form of petroleum, was helpful in waterproofing their vessels.

Vessel treated with pitch on left, untreated vessel on right.

And at almost the same point in time, a tribe from the darkermost regions discovered that a branch dipped in the black viscous substance made, when ignited, a moderately serviceable torch. Consequently, given the migratory nature of the tribes during that era, it was only a short step from these two discoveries to the development of the first leak-proof torch.

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Watching Washington

REID BEDDOW

HOUSE/SENATE TRANSIT TRADEOFF?

Diversion of Highway Trust Fund monies to rapid transit seems dead until 1974 anyway, say Congressional sources in the wake of the 215-190 defeat on April 19 of an amendment to the 1973 Federal-Aid Highway Act in the House of Representatives that would have allowed cities and states to use $700 million of trust funds for non-highway urban use. But all is not despair for rapid transit men. The House-passed highway-aid bill and the Senate version now go to a conference committee where an important *quid pro quo* may take place. The Senate version, as all men know, contains a provision siphoning $850 million annually from trust monies to rail rapid and bus urban systems. If the Senate recedes from this provision, say House Public Works Committee sources, thus allowing no diversion, the House will go along with another Senate bill provision which channels $800 million a year from general funds to defray operating subsidies of urban mass transit systems. Such an outcome seems irresistibly attractive to Congress in this year of Executive-Legislative confrontation, because DOT Secretary Claude S. Brinegar has threatened a presidential veto if Congress passes a bill with the operating subsidy clause. In any event, the House defeat of the diversion amendment, offered by Rep. Glenn Anderson (D-Calif.) was a stunning defeat for Mr. Brinegar who made an all-out attempt to secure House passage of diversion. If the tradeoff of diversion for operating subsidies takes place in conference, Mr. Brinegar's highway problems may just be beginning.

The conference committee report will probably also recommend that UMTA capital grants for rapid transit be awarded on a new 80-20 matching ratio, up from the present two-thirds to one-third.

In any case, the 1973 Highway-aid act stands to aid rails. The House version authorizes $150 million in fiscal 1974 for grade crossing safety and $225 million in fiscal years '75 and '76. At least half of this total of $600 million is ordered for grade crossing protective systems—$200 million for Federal highway system protection and $100 million for crossings on auxiliary roads. The Senate bill authorizes $400 million for grade crossing protection over a two-year period. Both versions, in addition, authorize track relocation projects in the Midwest. The conference committee will meet in early May.

TRANSPORT-EXPO

Remember the U.S.'s Transpo '72 exhibition in Washington last summer? *This* spring France will host a similar exhibition outside Paris in conjunction with the famous International Aeronautical Show at Le Bourget. It is called Transport-Expo and will be held June 4 to June 8 in the exhibition grounds at the Porte de Versailles. Billed as the "first international exhibition and conference on advanced technology in surface transportation" (which seems an unkind slur on Transpo), the event will attract manufacturers from 10 nations, mostly European, but including LTV. It is to be noticed that DOT, which strong-armed European exhibitors to show at Transpo, will not exhibit.

tion—in one form or another. For the railroads, operations in the Midwest and—ironically—the Southwest have been hardest hit; service has suffered in some cases as trains were delayed when fuel supplies hit bottom or as some roads reduced train speeds to try to conserve fuel.

Different roads have been using a variety of methods to keep a fuel flow coming into the tanks; some have been luckier or more nimble than others in finding sources of supply; and in some cases, the cost of fuel in the tank has shot up sharply. Which leaves all concerned with mixed emotions—happy to have it, and happy to be operating, but staring glumly at the expense sheet.

Relaxation of import quotas is supposed to be helping ease the shortage; so is the coming of spring and the lessening of demand for heating oil. But if diesel fuel becomes a bit easier to get, another problem may take over—shortages of gasoline, which already seem to be cropping up in the Midwest. And, while railroads wouldn't be classed as major users of gasoline, shortages in this area could conceivably hit almost as hard on certain operations as the shortage of diesel fuel threatened to hit train operations. And, as matters seem to stand today, unless something gives somewhere, the energy crunch will be around for a while.

● **Opening up.** In the formal TMMF/RPI proceedings, after pre-registration on May 9, the seminar was to get under way the following morning with an address by L.W. Foy, president of Bethlehem Steel; and remarks by the seminar co-chairmen, Harold M. Hoffmeister, vice president-purchases and materials of Missouri Pacific and president of TMMF; and Elwyn T. Ahnquist, president of Pullman-Standard and chairman of RPI. Rounding out the first day will be the opening series of workshops, a luncheon address by a representative of Shell Oil on the energy crisis and how it affects the railroads, and, finally, what TMMF and RPI call "all in the family-Phase II", a re-make of a successful presentation at last year's TMMF meeting in which P&MM people and suppliers go at each other, in skit form, with needle and rapier—good, clean fun but with a point.

An address on the impact of government standards on purchasing by a representative of McDonnell-Douglas was to lead off the program May 11, followed by a film on product liability.

The Shell representative was to be M.R. Thomasson, manager planning and economic forecasting. McDonnell Douglas was to be represented by R.K. Rapp, manager procurement negotiations.

Planning for the seminar has been handled by a committee chaired by G.M. Hower, general purchasing agent of Union Pacific; and J.W. Thomas, general manager-sales of Timken.

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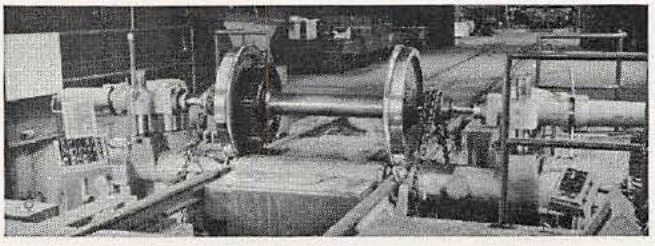

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Wood and the railroads: Can demand

By MERWIN H. DICK
Engineering Editor

The price of wood lately has been in a steep rise. Demand has been high for types of lumber used in building construction, especially homes. Lumber shipments destined for export, with Japan being a heavy buyer, have helped to deplete the supplies available for domestic use.

So why should railroads be concerned? For several reasons. One is that railroads are still almost completely dependent on the wood crosstie in track construction and maintenance. Their current installations are running at the rate of about 20 million ties per year, but track men say that the actual needs are closer to 30 million ties annually.

Another reason for railroad concern is the fact, according to one estimate, that railroads still have about 1,800 miles of timber trestles to maintain. Thus, every year they must find large quantities of timber stringers, caps and piles for renewing and repairing these bridges.

● **Two considerations.** Behind the concern of the railroads in this situation are two considerations. One, of course, is rising prices. Because of increasing demand for lumber for domestic use and export, railroads find themselves in competition with other users of wood in bidding for available supplies. Higher prices for ties and bridge timbers are, therefore, inevitable. One railroad reports, for example, that the current average cost of ties as they come out of the woods is 15% higher than just a year ago, and there is reason to believe that this figure is conservative.

The other consideration is that some railroads are experiencing difficulty in filling their needs for ties, especially, the 7-inch by 9-inch tie, which is standard for main-line use on most railroads. There is also difficulty in obtaining bridge caps and stringers in the sizes and lengths needed. Reports one bridge engineer: "We used to get southern pine stringers in 28-foot lengths, but now we are down to the 14-foot lengths. We can get the longer lengths in Douglas fir but this wood doesn't take treatment very well, even when it is incised."

Short-range, there isn't much that can be done about the predicament in which the railroads find themselves as a result of the supply-demand situation in wood, observers say. They have their needs and these must be met at whatever prices are set in the marketplace, providing that ties can be obtained at any price.

● **Long-range steps.** But long-range the situation is somewhat different. Steps can be taken, in fact, are being taken, to get better performance out of the wood tie. These steps include measures to get ties of the desired size by joining smaller pieces through lamination. Through the same general process, bridge stringers are being produced of the sizes and lengths desired, thereby offering hope of overcoming the shortage of solid sawn members. To be sure, these measures are still largely in the experimental stage. So are other steps being taken with the goal of protecting the wood tie from checking and splitting and of reinforcing it in the rail-bearing area, even to the extent in some cases of obviating the need for steel tie plates.

Track men, tie producers and wood treaters who are involved in these various endeavors to enhance the performance of the wood tie have another reason for doing so besides the obvious savings that would result if the tests prove successful. They are aware that the time may come when there may not be enough wood to satisfy the demand for it. Hence, to the extent that the needs of the railroads for wood can be reduced they will be able to cope with reduced supplies.

● **The wood outlook, long-term.** What, therefore, is the long-range outlook for the wood supply in relationship to the demand? At the annual meeting last October of the Railway Tie Association the outlook was analyzed by Dr. Dwight Hair, director of special studies, Division of Forest Economics and Marketing Research, U. S. Forest Service. Speaking especially of hardwoods, Dr. Hair summarized his appraisal in these words:

"We have enough hardwood sawtimber in the North and in the South Atlantic Region to support an increased level of cutting in the next few years. Beyond this, however, projected demands rise more rapidly then supplies. Thus, unless management and research programs are promptly intensified we can expect increasing competition and rising prices."

● **Bolstering the standard tie.** Actually, efforts to prolong the life of the standard wood tie, and thereby to reduce the dependence of the railroads on wood, have been going on for many years. Measures that have been taken to this end were outlined recently by D.L. Davies, technical director for Koppers Forest Products Division. The incising of gum ties, and oak ties to some extent, is one of these. The purpose is to inhibit the checking of wood that would otherwise occur and also to promote penetration of the preservative.

Another measure mentioned by Davies is the practice of seasoning ties

be tailored to fit supply?

DOWEL-LAMINATED ties are being tested on a number of railroads. In this process two pieces are joined by steel dowels. The purpose is to meet the increased demand for main-line ties and to increase the raw-material yield of hardwood timber.

VENEER-CAPPING of hardwood ties as a means of reducing splitting is being tested at the Forest Products Laboratory at Madison, Wis. Results of the capping compared with uncapped ties after a period of weathering are apparent from this view.

THICK-VENEER LAMINATING is a method of rotary cutting veneer up to ½ inch thick directly from the log and laminating into a thick structural material in less than 30 minutes. This process is under consideration as a means of producing laminated crossties.

GLUE-LAMINATED stringers, which are quickly installed, are being used to an increasing extent in timber bridges. This is one of several such structures on the Louisville & Nashville. Concrete caps comprise another feature of the bridges.

under roof which has been adopted by southern roads. This results in faster seasoning and protects against the possibility of decay getting started in the ties prior to treatment.

The vapor drying of ties, which is thought by some to have a beneficial effect on the tie, has shown considerable growth, Davies indicated. He also points out that in the last twenty years the dowelling of main-line ties has grown from the infant stage to a fully developed commercial practice. This has helped to reclaim many ties that otherwise would have been discarded, and hence has been a factor in cost reduction.

What have these improvements meant to the railroads in terms of additional tie life? One answer is given by the tie-treatment officer of a large railroad. Ties that are now coming out of track on his road have given an average life of 42 years, he says. His "guesstimate" is that, largely because of improved treating practices put into effect by the railroad, ties now going into the tracks are expected to have an average life of 54 to 60 years.

● **Promise of wide-dowelling.** The practice of joining two pieces of wood with steel dowels to form an out-size tie—called wide-dowelling—is thought to have considerable promise in some quarters. This practice offers a way of using wood pieces that are too small for producing standard size ties. Also, the wider bearing area offered by these ties—12 inches, for example—is thought to have advantages in heavy-traffic territory. The wide-dowelled tie also lends itself to wider spacing in track than the standard tie.

Several test installations of wide-dowelled ties have been under observation for periods as long as 13 years. The oldest is one on the Illinois Central Gulf near Carbondale, Ill., which was installed in 1960. A total of 260 such ties were installed on the Louisville & Nashville near Murfreesboro, Tenn., in 1967, and 300 went in on the Chicago & North Western at Des Plaines, Ill., in 1968. At all these locations the spacing of the ties is wider than standard. And the performance of the ties at all locations is reported to be satisfactory.

Based on its experience with test installations of wide-dowelled ties a large railroad, it is understood, has decided to make further installations of such ties.

Ties can also be formed from two pieces of wood by using adhesives instead of steel dowels. Test installations of such ties have been in service on the Canadian Pacific and the Canadian National since 1970.

● **Glue-laminated ties.** Crossties of the type in these Canadian tests are described as vertical-laminated ties to differentiate them from ties formed by gluing several horizontal layers together, called glue-lamination. Such ties are thought to have advantages, including the fact that they can be manufactured from kiln-dried lumber, thereby circumventing the long seasoning period usually required. Glue-lamination also permits ties of any size to be created from ordering lumber, and reduces the lead time from the ordering stage to insertion in track.

Another advantage of glue-lamination as applied to ties is that the process offers the possibility of using a much greater percentage of the log. One estimate is that present methods of producing ties permit the use of only about 20% of the log. But the cost factor of glue-lamination, in its present stage of development, is said to be a drawback.

The earliest known test installation of glue-laminated ties went into service on a Canadian railroad in 1948. The ties in this test were each made of five horizontal laminations. A man who inspected these ties last year reported they "looked like they were brand new."

● **More wood from the log.** A process of glue-lamination that is thought to

Concrete and steel have cut the need for bridge timbers

have promising possibilities in the manufacture of ties is one developed at the Forest Products Laboratory, U. S. Department of Agriculture, Madison, Wis. By this process the product yield from logs from 12 inches to 18 inches in diameter is reported to average 60%.

This method is known as thick-veneer laminating or the Press-Lam process. It consists of rotary cutting veneer up to ½ inch thick from logs, press drying the thick veneer in less than 15 minutes, applying glue to the hot sheets, and laminating them into a thick structural material. From log to product, the entire processing time is reported to be less than 30 minutes. Preservative treatment is performed following lamination, and may be done right away.

Thick-veneer laminating is under investigation as a means of producing crossties. One of its attractions is greater economy compared with other methods of glue-lamination. However, a spokesman at the Forest Products Laboratory said that a new technique under development in the manufacture of glue-laminated members gives promise of bringing about a further substantial reduction in the cost.

● **Capping, reinforcing.** The veneer-capping of ties is a method now being tested as a means of prolonging the life of hardwood ties by reducing damage due to splitting. This process involves gluing a sheet of veneer to the top of the tie with its grain perpendicular to that of the tie.

Veneer-capping has been under test at the Forest Products Laboratory. There are also veneer-capped ties undergoing service tests on the Southern and the Seaboard Coast Line, according to C. A. Burdell, director, research and development, Southern Wood Piedmont Co.

Burdell also said that several methods of reinforcing ties in the rail-bearing areas are being tested. One method, being tested on the L&N, consists of ties fitted in the rail-bearing area with pieces of edge-grain hickory 1½ inches thick set into daps in the tie and fastened with epoxy glue. They have a cant of 1-in-40 and take the place of steel tie plates. They have been under observation since 1966.

Also under test is a method of reinforcing pine ties in the rail-bearing area through the use of hardwood dowels inserted into holes in the ties. The dowels, 2 inches in diameter and 1½ to 2 inches long, are glued into holes bored in the wood of the crosstie. About a hundred such ties have been under observation on the Florida East Coast for approximately seven years, says Burdell.

A somewhat different method designed to get more life out of ties was described by Burdell. Under test on the Southern and the SCL, this method involves the treatment of oak and mixed hardwood ties with a creosote coal-tar solution to which 15% of Shell WT wax was added. The purpose is to increase the moisture stabilization of the wood, thereby, says Burdell, "improving the shrinking and swelling and ultimately the checking and splitting that occur in service." Two test installations have been in service since 1965, and the appearance "is still generally good," says Burdell.

● **"Particle board" ties.** An entirely new departure in manufacture of wood ties involves the so-called "particle-board" concept. So far as is known, only one such tie has been developed. This is the Colwood tie as developed by Collins Synthetics, Inc. The tie is described as being 92% processed wood plus adhesives and sealants. A number of Colwood ties have been installed for test purposes at widely scattered locations, but the latest information is that the tie has not been placed in full production.

RECYCLING OLD TIES?

The ultimate in wood conservation on the railroads would be the recycling of old ties, either to produce reconstituted ties or other wood products. Exploratory work in this area has been done by the Forest Products Laboratory. This work has consisted of producing wood fibers by hammer-milling some old ties and using the fibers, in conjunction with an adhesive, to produce a single reconstituted tie. Work is now being done to determine the spike holding power of this "particle-board" tie.

All these ideas for prolonging the service life of the wood tie, or of getting more out of the available wood supply, are interesting, but basically they are all still in various stages of experimentation. At best, it will be many years before any of them can be expected to have a perceptible effect in helping to reduce the railroads' dependence on wood for ties.

● **Wood for bridges.** The problems railroads are facing in obtaining wood for bridges are not as serious as those concerning the wood tie, but they are pressing. An important reason why they are not so difficult is that to a considerable extent steel and concrete have replaced wood in the construction of railroad bridges, thereby reducing the demand for bridge timbers. And on some roads concrete and steel members are being used in the construction or repair of timber bridges.

A number of roads, for example, have adopted the practice of installing concrete caps on timber bents, for either replacement or in new construction. The concrete caps cost more than wood but their greater strength is considered a worthwhile advantage by some bridge engineers. On some roads steel beams have been used in place of wood stringers in timber trestles.

● **Glu-lam stringers gaining.** The process of glue-lamination also comes into the picture as a means of helping to solve the problem of obtaining solid sawn timbers in the size and length required for bridge stringers. The idea of using glue-laminated (glu-lam) stringers in timber trestles is not new. Such members were first installed in a railroad bridge in 1944. Since then perhaps a half dozen or more railroads have made installations of glu-lam stringers.

Glu-lam stringers in use are reported to be giving satisfactory service. While their use is increasing they are still considered experimental on most roads. A railroad that is accumulating experience with glu-lam stringers is the L&N. In 1971 it constructed a ballasted-deck trestle using glu-lam stringers supported on timber-pile bents with concrete caps. This structure replaced a standard timber trestle 321 feet long.

L&N has since built three additional structures with glu-lam stringers although one of them has concrete abutments and piers instead of timber bents.

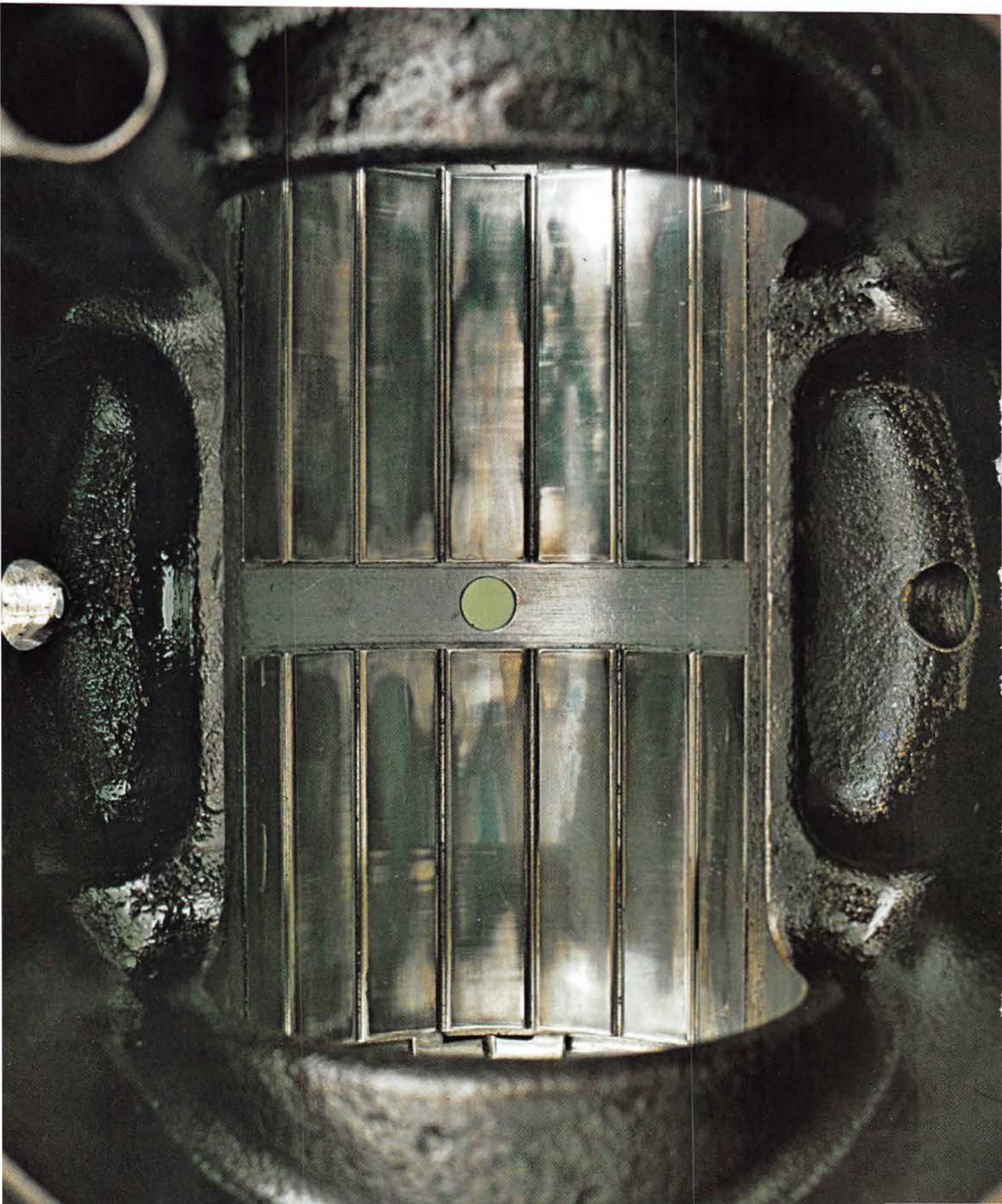
Because it was hard-pressed to get the required number of solid sawn members, another railroad last year used glu-lam stringers in rebuilding eight bridges on secondary lines. The longest of these bridges is 109 feet in length.

Glu-lam stringers are considered to have a number of advantages by the people that fabricate them. Such members, they say, are readily available in any cross section and length dimensions. The stronger grades of wood can be positioned at the tops and bottoms of the members to produce maximum strength against bending moment. There is freedom from checking and, because of superior treatability, there is greater penetration of preservative. Finally, they are said to permit longer spans, quicker installation and a saving in bent construction.

Observers expect that, in due course, the glu-lam stringer may be a factor in helping railroads overcome the scarcity of solid sawn timbers of the required size. But these same observers are convinced that the problem of providing an adequate tie supply at reasonable prices will not be so easily solved. The basis for this point of view is that a substitute material for crossties has yet to be developed that meets all the criteria of most track men. For this reason, it is held, railroads will have to rely on wood for crossties for many years to come. ■

Shell's Caprinus™ T Oil 40 lubricated hard-working GE U-36's and EMD SD-45's for over 100,000 miles. How did it perform? These pictures tell the story.

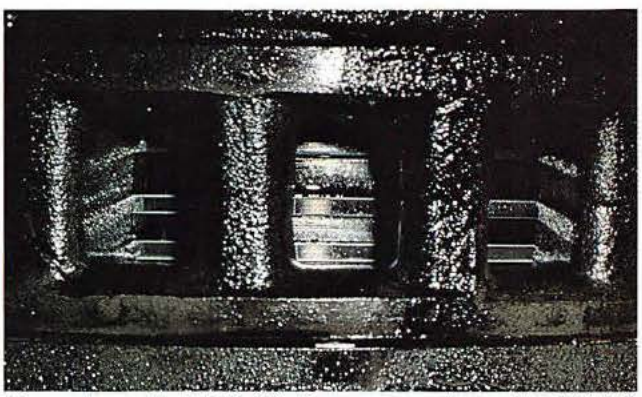
Clean, trouble-free parts show can help extend oil drain intervals



why Shell's Caprinus T Oil 40 on GE U-36's and EMD SD-45's.

Stretch oil drain and filter change intervals and still get excellent performance in high-horsepower engines. That was the basic idea behind Shell's development of this locomotive diesel engine oil having outstanding dispersancy and alkalinity retention—Shell CAPRINUS T Oil 40.

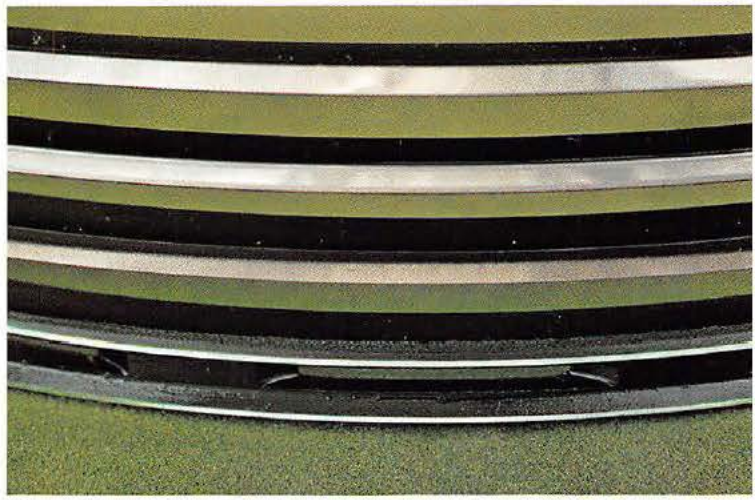
There was only one way to find out how CAPRINUS T Oil 40 would perform in standard freight service—put it to work for more than 12 months (in excess of 100,000 miles) in GE U-36's and EMD SD-45's. Change the oil in the GE U-36's at approximately 50,000 miles during the trial. Drain the EMD SD-45's at the end of 12 months. Then inspect all the power assemblies. The pictures on these four pages show what happened. CAPRINUS T Oil 40 did an exceptionally good job.



The ports on the EMD SD-45 were very clean after 100,000 miles. For example, No. 13 port is 100% open. No deposits. And look at the ring faces. Grooves on the top ring are still visible—indicative of low wear. Grooves on second and third rings are even better. (EMD chrome ring wear classifications: top—two; 2nd—one; 3rd—one).

Undercrown of GE U-36 steel crown piston taken from locomotive Unit 1798 shows no evidence of coking in the undercrown cavity after operating approximately 100,000 miles and having only one change of CAPRINUS T Oil 40 at 50,000 miles.

◀ Silver pin bushing removed from EMD SD-45 (locomotive Unit 2021) after 100,000 miles on Shell CAPRINUS T Oil 40. There is no feathering on the edges of the six grooves and most of the lead flashing is still present.



Piston rings on the GE U-36 showed no scuffing, no sticking and very low wear. Ring gaps were well within new parts tolerance. Lots of chrome still visible on top two barrel-faced rings; third, a taper-faced ring, still has more than a third of its original break-in phosphate coating; no deposits in oil ring slots.

Both engines stayed clean.

First, we looked at the top deck of an EMD SD-45 locomotive. Unit 2021. It was in excellent condition. Rocker arms, valve springs and cam shafts—clean. Top deck covers—gleaming. (See front cover.)

When this 20-cylinder, 2-stroke, 3600-HP engine was changed over to CAPRINUS T Oil 40 more than 100,000 miles ago, wide bands of lacquer were present on the top deck covers. This section of the engine was cleaned up by the CAPRINUS T Oil 40.

Now look at the rest of the critical parts, both the EMD SD-45 (from Unit 2021) and GE U-36 (from Unit 1798)—a 16-cylinder, 4-stroke, 3600-HP turbocharged diesel. The latter has in excess of 100,000 miles service with CAPRINUS T Oil 40.

Clean parts tell the story.

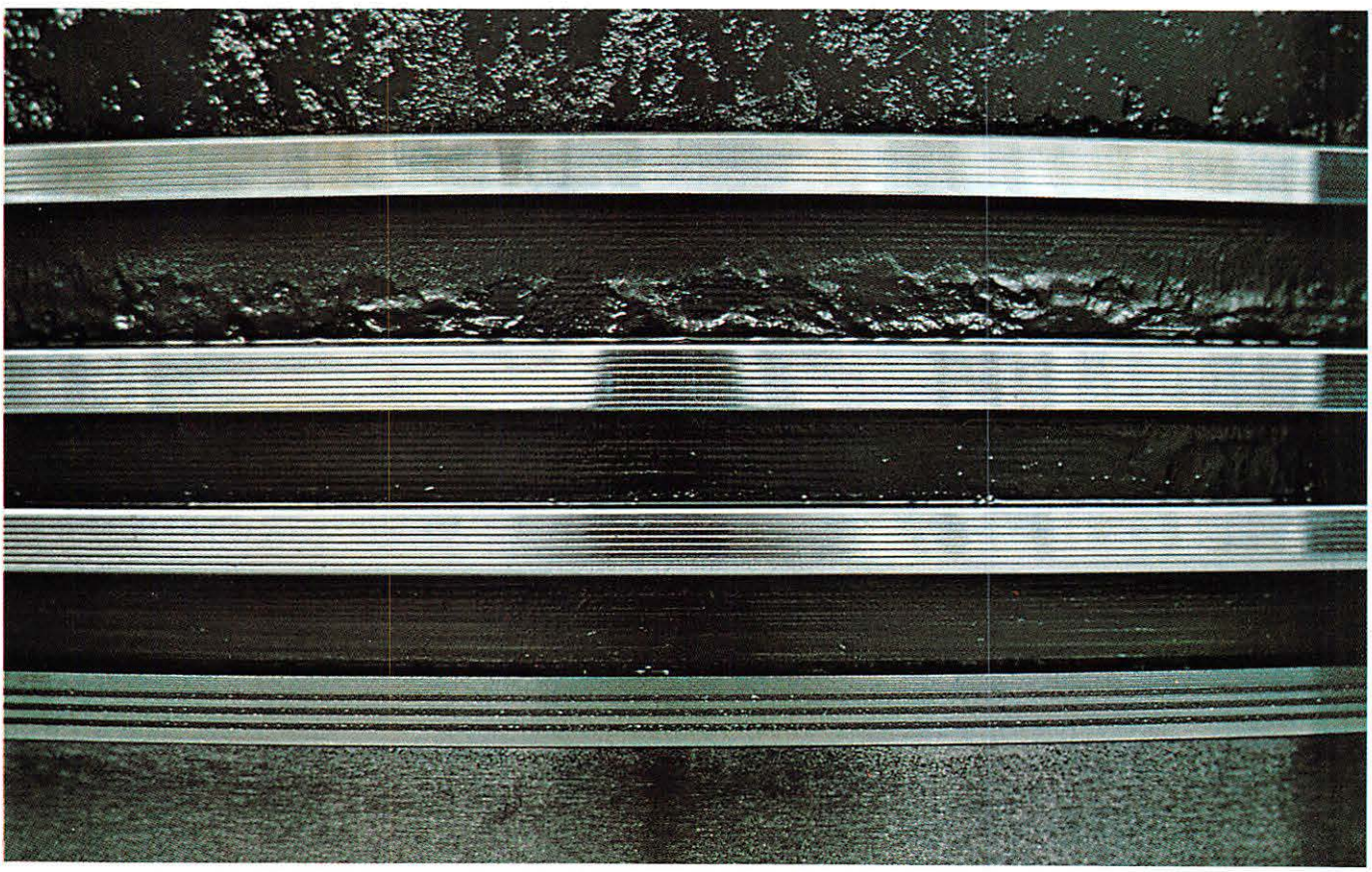
The parts are remarkably clean. In the EMD SD-45 the piston rings were free. Side clearance and ring gap measurements were nearly within new parts tolerance. And in the GE U-36, piston rings were free, and ring gap measurements were within new power assembly specifications.

How CAPRINUS T can help cut your costs.

Shell recommends CAPRINUS T Oil 40 for severe service in both 2-stroke and 4-stroke power because CAPRINUS T Oil 40 offers: (1) Exceptional base number retention. (2) High dispersancy level. (3) Superior resistance to oxidation. (4) Control of ring-belt deposits. (5) Clean piston undercrown areas. (6) Low wear rates.

See back cover for more evidence of the capabilities of CAPRINUS T Oil 40.

Here's more evidence of the excellent performance of Shell Caprinus T Oil 40 in GE U-36 and EMD SD-45 engines.



The rings shown above from the EMD SD-45 were in excellent condition after 100,000 miles. EMD chrome ring wear classifications were: top ring—two; second and third rings—one. The rings from the GE U-36 showed no scuffing, no sticking, very low wear. Ring gaps were within new parts tolerance.

Is there an idea here for you?

Let a Shell Transportation Sales Representative give you more detailed information on Shell CAPRINUS T Oil 40—and make recommendations for your equipment regarding extended oil drain and filter change intervals.

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Shell's Caprinus™ T Oil 40

SHELL

Chicago pushes regional-agency plan

With any luck at all, mid-May should see the start of a new phase—hopefully, a final phase—in the planning for a regional mass transportation system in the Chicago metropolitan area.

That's the time when a special Illinois Transportation Study Commission, after holding a series of hearings, is supposed to arrive at a legislative proposal through which the regional setup would be created. At this point, nobody knows what the Commission may come up with. But, there are at least a few indications pointing to a bill differing not too markedly from the railroads' basic proposal which has already been put in bill form and introduced in the Illinois Senate.

What happens when the legislative process starts to work is also anybody's guess. As constituted by legislative resolution, the Commission is made up of public members as well as members from both houses of the legislature—including leaders in each house. Presumably, its proposal will carry a fair amount of weight in both houses and on both sides of the aisle in the almost-evenly-divided Senate and General Assembly. But, the workings of Illinois politics are never easily predicted and often not easily understood. Complex matters related to financing and control of a regional authority must be worked out. The interests of many diverse entities—commuter railroads, suburban bus lines, the Chicago Transit Authority among them—must be considered. Chicago Mayor Richard J. Daley must be considered. So must the downstate politicians whose support will be needed but whose attitude toward the metropolis at the northeast corner of the state is often one of distrust. Finally, Illinois Gov. Daniel Walker must be considered. Once already he has bucked the legislature on a mass-transportation matter—emergency aid for CTA (RA, April 9, p.15)—and he came bloody out of that struggle; and at this point, it's a genuine optimist who would forecast peaceful co-existence between governor and legislature or between governor and fellow-Democrat Daley.

● **Point of agreement.** There is, however, a seeming consensus on the basic point involved—that there should be a regional plan and regional authority for operation of the many and fragmented transportation agencies that make up "mass transportation" in the six-county metropolitan area. Mayor Daley had been considered a major problem in this context, since regionalization would inevitably dilute city control over CTA. But, the mayor has been saying he'll help work for a regional approach and that's a good sign.

In addition, there has been a certain amount of pressure from Washington—pressure exerted in the form of warnings that the Chicago area had better come up with a comprehensive plan if it hopes to stay in the running in the hot competition for the limited Federal funds which are available. As usual, there are more requests for money than there is money.

Meanwhile, the Chicago-area commuter railroads are taking a strong stand in favor of an authority with authority—and they recently got, from the Transportation Center at Northwestern University, a study showing what public transportation now does and what it could do under regional organization.

● **"Something more than. . ."** Principal spokesmen for the six railroads have been Chicago & North Western President Larry S. Provo and Rock Island Vice Chairman and Chief Executive T. E. Desch. It was Ted Desch who summed up the carriers' position when the Northwestern report was presented: "We believe very strongly that to be effective a regional agency must be something more than a loose amalgam of existing transit operators, possibly under some sort of regional political umbrella but continuing to function much as they do now. . .We are convinced that the Chicago metropolitan area must have a regional agency that owns—and operates—every bit of the public transport network in the region. . .Whatever you wish to call the regional agency, the key to its success as a public servant is giving it operating authority."

> Commuter railroads, says Rock Island's Desch, want an "authority" with real authority.

The Transportation Center study, commissioned by the railroads and under way since last summer, came to four basic conclusions:

—The area's public transportation network is out of step with the area's needs.

—If things go on as they are, service will continue to deteriorate.

—Changes that ought to be made are "almost entirely institutional," with little need for new equipment or additional personnel to meet immediate needs.

—Accessibility to job sites (a significant factor in any metropolitan region and especially so in the Chicago area) could be significantly increased if transit services can be coordinated under a regional authority.

● **What could be done.** Northwestern researchers looked at four principal modifications of the existing transportation network and drew certain conclusions as to what each might accomplish:

—Provision of frequent reverse service on commuter rail line during rush hours. This, they found, would have little impact on its own but could help improve accessibility if it were combined with

—A network of collector/distributor bus routes in the suburbs which would operate on schedules coordinated with the railroads and CTA rapid-transit lines.

—Addition of a rail rapid-transit line around the city (at, approximately, the city limits) to link existing rail and CTA routes and provide a bypass around the downtown area. This, the researchers said, would improve access considerably all across the region.

—Addition of a second circumferential rail rapid-transit line well out into the suburban area. This, they found, would have minimal impact and "apparently represents the onset of diminishing returns."

As with most old metropolitan transportation networks, Chicago's was designed to bring suburb dwellers to city jobs downtown and to provide intra-city transportation. The integrated regional system would bring accessibility benefits mainly to two segments of the population—people living in the city but working in the suburbs or on the outer edge of the city, and people living in one suburb and working in another.

And when all the figures were filtered through the computer, the research team determined that:

—If schedules, routes and service frequency of the railroads, the CTA and suburban bus lines coordinated, 80% of the region's population could have a five-fold increase in accessibility to jobs, and

—If the inner circumferential rail rapid-transit line were added to this network and coordinated with it, 80% of the population could have a seven-fold increase in job accessibility.

● **Costs—and timing.** The research team emphasized that there is actually enough rail and highway equipment around to do the job, if it were properly coordinated. The only major capital cost involved would be for creating and equipping the circumferential rail route—and even there, rail rights-of-way are already located approximately along the route plotted. ■

General Electric progress in

50-KV railway demonstrates GE's systems capability

A milestone in the evolution of railway electrification, the new Black Mesa & Lake Powell Railroad at Page, Arizona, demonstrates General Electric's broad approach towards advancing the state-of-the-art. On this first 50,000-volt railway, GE is supplying the entire electrification system except for the overhead wire. Its 6000-hp E60C electrics will pull as many as 83 122-ton coal cars from the Black Mesa mine to the new Navajo Generating Station 78 miles away.

In addition to these 50-KV locomotives, General Electric is also providing substations and total automation on both main line and loading areas.

Amtrak orders high-speed electrics for system-wide passenger service

The National Rail Passenger Corporation (AMTRAK) has ordered fifteen high-speed, high-performance electric passenger locomotives from General Electric.

Combining proven electric motive power innovations with features designed specifically for AMTRAK service, these new E60CPs will operate between New Haven, Connecticut and Washington, D.C., U.S.A.

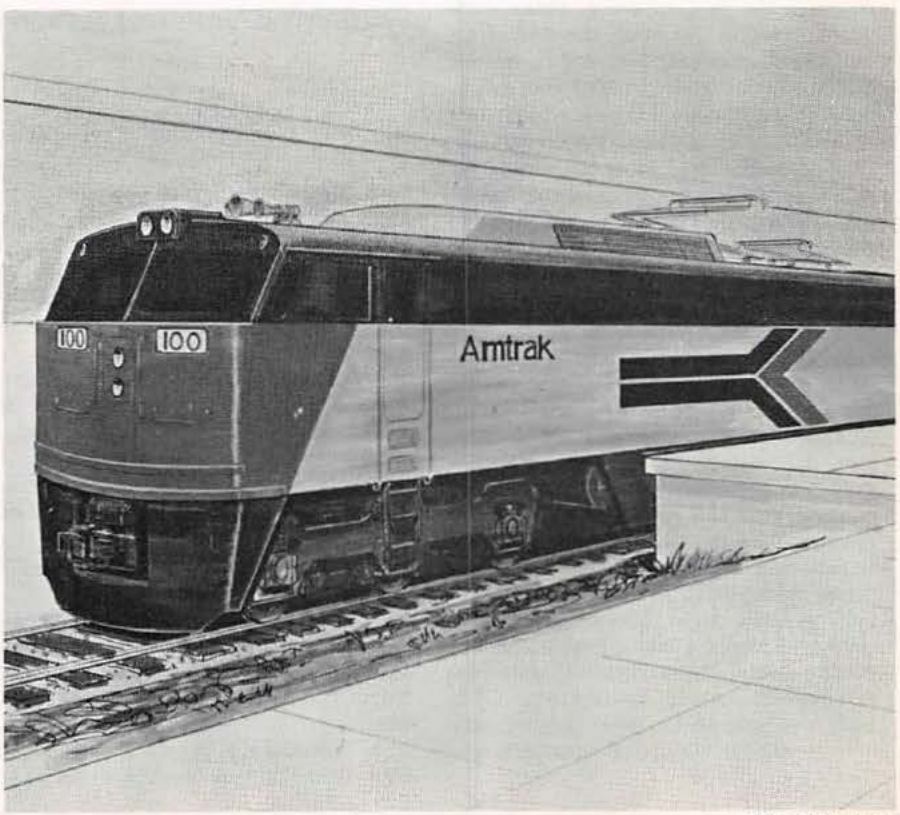
They can operate effectively on three different power sources—25 kv, 60 cycle; 12½ kv, 60 cycle; and 11 kv, 25 cycle—and thus maintain passenger service over the entire Northeast Corridor, even after the line is fully converted to 60 Hz AC power.

On any of these sources, the locomotives will be able to achieve speeds up to 120 miles per hour and a maximum short time rating of 10,000 horsepower.

Design features include:

- a double-ended cab for bi-directional service.
- modern thyristor propulsion control system whose proven circuitry and easily maintained solid-state equipment provides smooth acceleration.
- and a steam generator which provides train heating, lighting, and air conditioning.

The new locomotives are scheduled for delivery in mid-1974.



transportation systems

General Electric transportation systems

Key electric locomotive features

To provide optimum electrical component performance and maintainability, GE electric locomotives incorporate advanced state-of-the-art improvements.

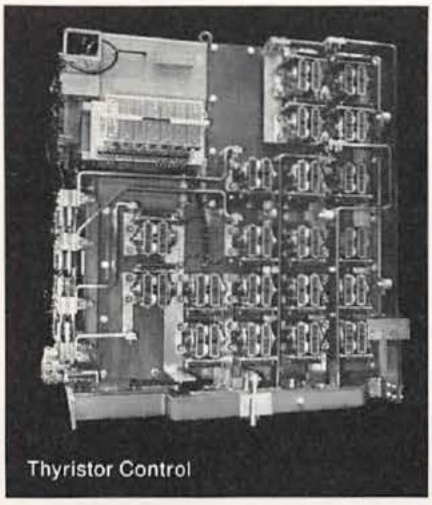
Thyristors—special circuitry provides smooth, automatic voltage phase control and low maintenance operation. Thyristor and rectifier devices are a new innovation called the *Press-Pac Cell*. Mounted on a plenum chamber, they are cooled with filtered air.

Plug-in-Cards—which can be removed and replaced in seconds, assure easy maintenance.

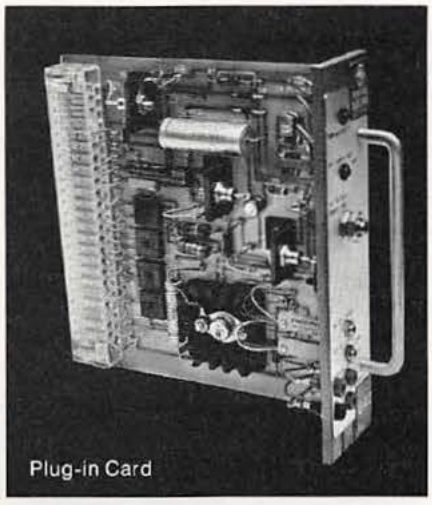
GE-780 Traction Motor—features rubber-top triplex brushes for longer service, Kapton-Nomex insulation for higher dielectric strength, and roller axle support bearings for low maintenance and high reliability.

Vacuum Interrupters—protect primary and secondary windings against instantaneous and sustained faults as well as grounds and overloads in the power circuits.

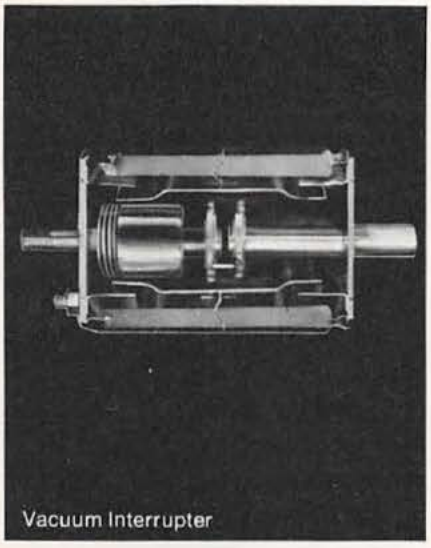
Wheel Slip Control—individual axle slip control reduces power on the fewest number of axles necessary to correct a slipping condition. Smooth application of power also contributes to adhesion.



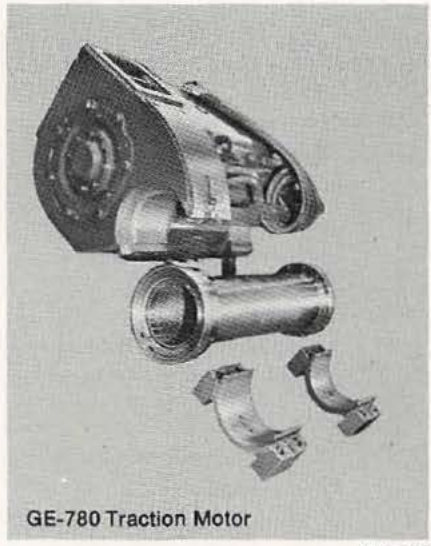
Thyristor Control



Plug-in Card



Vacuum Interrupter



GE-780 Traction Motor

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Test track assures high performance

AMTRAK's E60CPs will be extensively tested on the multi-voltage, multi-frequency track located at General Electric's Erie, Pennsylvania manufacturing facility.

Electrical equipment and circuits, air distribution system, auxiliaries, protective devices, cooling pumps, and fans will be analyzed under actual operating conditions. During track testing, a specially-designed rolling laboratory equipped with advanced instrumentation and computers will conduct a variety of engineering tests.

As a result of such advanced testing, General Electric has the opportunity to assure performance completely in tune with its exacting reliability standards.

Electrification– the way to economy and availability

General Electric's leadership in the new 50-KV technology clearly indicates its solid commitment to rail electrification progress through creative innovation. Potential economic benefits for high-volume railroads are outstanding.

S. G. Hamilton

S. G. Hamilton
Manager — Railroad Electrification

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GENERAL ELECTRIC

Amtrak "The beginning has

Isn't it a fact that the Amtrak system, after July 1, will be a much-shrunken version of the network that the National Railroad Passenger Corp. began business with two years ago?

Isn't it also true that Amtrak is so hard put to meet its $260,000-a-day operating losses that there's next to nothing left to invest in new cars and locomotives?

And isn't it irrefutably a matter of record that Amtrak has nothing to pour into roadway improvements?

In a word—no.

The facts, which may come as a shock to Amtrak' poor-mouthers, are these:

—Even if its much-publicized service reductions are permitted by the ICC to become effective after the beginning of FY 1974, Amtrak will still be operating more trains over more route miles than it did on May 1, 1971. The planned reductions include abandonment of the "Floridian" with substitute service offered between Chicago and Florida via Richmond; elimination of the New York-Washington-Kansas City and the Newport News-Richmond schedules; and some service combinations in the West. But they are more than compensated for by experimental services which Amtrak has introduced since 1971 and is retaining (e.g., the "North Coast Hiawatha") and other new services added with the financial assistance of state and local governments.

—Amtrak, though anticipating a $95.6-million loss in FY 1974, has nonetheless been able to budget $150 million for capital improvements—far more than most Class I roads will spend. This will include $40 million for new cars ($15 million for locomotive-hauled equipment, for which specs are now being rushed to completion; and $25 million for new corridor cars—possibly trailer cars to beef up the Metroliners); plus $13 million for refurbishing old cars. Another $27 million will go for new locomotives, and $4 million for overhaul of old ones. All of this comes on top of locomotive expenditures which totaled $32.5 million in FY 1973; plus a car-and-related-facility investment estimated at $65.1 million. (The latter included the purchase of two ANF-Frangeco turbotrains from France and two United Aircraft turbos from Canada. The French trains will be shipped June 15 and will arrive in Chicago via the St. Lawrence Seaway around July 15. The Canadian trains will arrive a little earlier. All are to go into service in the Chicago-St. Louis and Chicago-Milwaukee corridors around Sept. 1.)

—And $50 million—a third of the total capital budget—will go into roadway in FY 1974, mostly for corridor improvements. This is in addition to $16 million earmarked for station and other facility improvements.

Does all of this sound like a company that is preparing for a going-out-of-business sale? Hardly. Nor does Amtrak President Roger Lewis talk much like the "liquidator" that he says people were calling him a scant two years ago.

Amtrak has big problems, still—and one of the biggest, from Lewis's point of view, is poor on-time performance. In March the 6,072 trains operated by Amtrak had average on-time performance of 68%—up from February's 66.7% but down from the 75% averaged in 1972. This is something Lewis is anxious to correct. What he would like to see is incentives for good performance, penalties for the reverse.

Lewis also has his problems with the 13 railroads that run his trains. Right now he's hassling with Southern Pacific over Amtrak's proposal for a new Dallas-Houston service. SP says it will take $7.5 million to bring the line up to passenger-train standards. The matter is in arbitration.

But on the whole Lewis is pleased with Amtrak's first two years, and bullish for its future. So is Amtrak's marketing vice president, Harold Graham, whose estimate is that Amtrak will attract an additional 2 million riders this year, a 15% increase, and who is skilfully using a $4-million ad budget to make his forecast come true. ("We tell them how they get there and what it costs; this is what the pre-Amtrak Amer-

PRESIDENT ROGER LEWIS: "In a sense people have bought the Amtrak experiment by agreeing to continue it."

WHERE AMTRAK's MONEY COMES FROM— AND WHERE IT GOES

($ in Millions)

	FY 1972 Actual	FY 1973 Plan	FY 1974 Plan
Cash at Beginning of Period	$ 12.2	$ 3.2	$ 3.9
Source of Funds			
Federal Grants	77.6	107.8	93.0
Federal Government Guaranteed Loans	17.0	83.0	100.0
Railroad Capital Payments	65.0	65.1	54.7
Total	$159.6	$255.9	$247.7
Application of Funds			
Net Cash Loss from Operations	152.3	124.0	95.6
Capital Expenditures:			
Equipment and Facilities	21.4	126.1	100.0
ROW and Corridor Improvement	—	—	50.0
Subtotal, Capital Expenditures	21.4	126.1	150.0
Accrued Liabilities	(5.1)	5.1	—
Repayment—Prior Loan	—	—	4.7
Total	$168.6	$255.2	$250.3
Cash at End of Period	3.2	3.9	1.3

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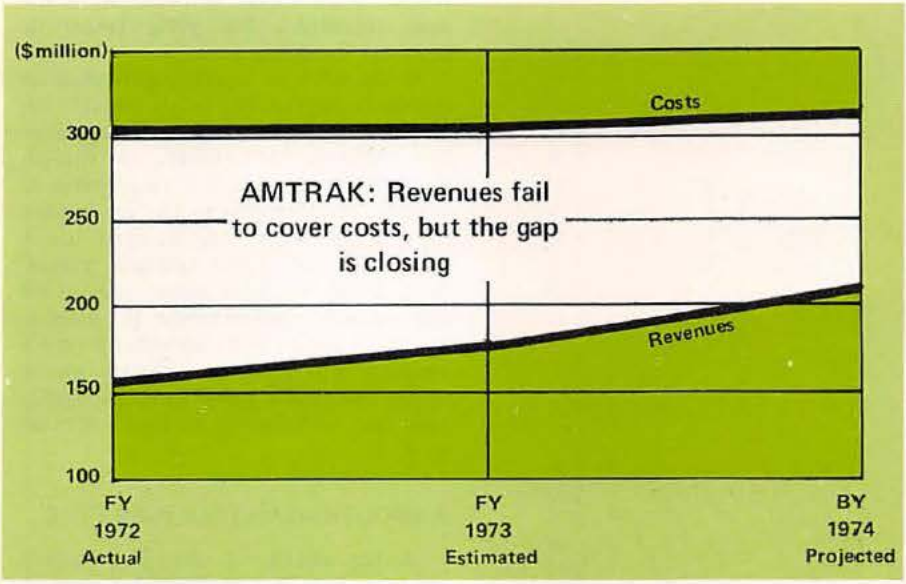


ican public did not know about trains.")

As Amtrak approached its second birthday, Railway Age talked with its president—about the corporation's first two years, and its immediate future.

RA: If Amtrak is to grow, or even maintain its status quo, it is clearly going to require a lot of money. Is that money available?

Lewis: The Secretary of Transportation sits on $8 billion a year. It's a question of whether the money already available is going to be channeled to railroads or to airways or to highways. What we have to prove is that railroad passenger service is viable, provides a solid option, and that people will use it. That's what we're busy doing. This country can do what it wants to do. If it feels that railroad passenger service is important, then it is going to have railroad passenger service.

RA: Do you have the feeling that the importance of this service is beginning to get across?

Lewis: I think that beginning is the key word. I felt two years ago that there was no beginning. Many of the people I was talking to had already made up their minds that this thing wasn't viable. They called me a liquidator, among other things. But when we began to bring the deficit down, and ridership up, people began to think, 'If they can do that with those resources, maybe we ought to think about giving them more.' So you could say the beginning has begun.

RA: Then the Amtrak experiment has been, so far, a success?

Lewis: Yes, and I'll tell you why. Look at it first from the point of view of public policy. The railroads of this country reported a loss of nearly $500 million on the operation of passenger services in 1969. When Amtrak was created, the route mileage was cut in about half. That was the first big step. In our first year we lost $156 million. In the second year we lost $124 million, and we absorbed a $23 million labor increase. In the third year the loss is going to be about $95 million, though we will absorb another $20 million increase. Now that's pretty good, from $500 million to $124 million to $95 million in a period of rapidly rising prices.

And that isn't the whole story. We had Arthur Andersen compute what the railroads are now paying in Federal income taxes, due to their being relieved of their passenger-service losses, which they were not paying before. That comes to around $80 million. So in three years, to go from a $500 million clipping down to $95 million, with a credit for $80 million—I'd say that's very good government policy.

Now look at it from the point of view of the passenger. Everybody loves options. And we now have the option of railroad passenger service. That can take the pressure off the problem that's worrying the public most—which is automobile congestion around the big cities. And a third thing was established by the study which Harbridge House did for us recently. The pressure on the bus and the airplane is going to grow. Costs are going to rise. But the private rail right of way is relatively underutilized. We can carry an enormous increase in traffic without increasing our costs.

Yes, Amtrak is a success. And the

AMTRAK CAPITAL COMMITMENTS
($ in Millions)

	FY 1972 Actual	FY 1973 Plan	FY 1974 Plan
Passenger Cars			
1. Purchase self-propelled corridor cars and related facilities	$ –	$ 36.3	$ 25.0
2. Purchase new conventional cars	–	–	15.0
3. Purchase used cars	16.3	3.0	–
4. Refurbish used cars	13.5	25.8	13.0
Subtotal	$ 29.8	$ 65.1	$ 53.0
Motive Power			
1. Purchase new locomotives	–	28.5	27.0
2. Purchase used locomotives	7.9	–	–
3. Overhaul used locomotives	–	4.0	4.0
Subtotal	$ 7.9	$ 32.5	$ 31.0
Right-of-Way Improvements	0.2	0.5	50.0
Facility Improvements	1.3	5.2	16.0
Research & Development	–	5.0	–
Subtotal	$ 1.5	$ 10.7	$ 66.0
Total	$ 39.2	$108.3	$150.0

FY 1974 Financial Plan Covering Operations

(Millions of Dollars)

Route	Profit/ (Loss)
Long Haul	
New York/Florida	$(2.9)
Chicago/Los Angeles	(0.5)
Chicago/San Francisco	(2.8)
Chicago/Seattle	(3.6)
Chicago/New Orleans	(1.0)
Seattle/San Diego	(1.2)
New York/Wash. D.C./Chicago	(3.3)
Los Angeles/New Orleans	(1.7)
Chicago/Cincinnati/Wash. D.C./Newport News 1/	(1.1)
Southern Montana 2/	(2.8)
Chicago/Houston	(3.4)
Chicago/Florida	—*
New York/Wash. D.C./Kansas City	—*
Subtotal	**$(24.3)**
Short Haul:	
Northeast Corridor 3/	$(5.0)
Chicago/Quincy 4/	0.2
Chicago/St. Louis	(0.1)
Los Angeles/San Diego	(0.2)
Seattle/Portland	(0.1)
New York/Buffalo	(3.1)
Chicago/Carbondale	(0.6)
Chicago/Detroit	(0.2)
Chicago/Milwaukee	(2.0)
Wash. D.C./Parkersburg 2/	—*
Subtotal	**$(11.1)**
International and Special:	
Vancouver	$(0.3)
Montreal	(0.5)
Mexico-via Fort Worth (tri-weekly)	(0.4)
Subtotal	**$(1.2)**
TOTAL, Routes	**$(36.6)**
Semi-Fixed:	
Terminal & Other	$(28.5)
Railroad & Amtrak G&A	(41.4)
Total, Semi-Fixed	**$(69.9)**
Total, Operating	$(106.5)
Less Depreciation	10.9
Net Cash Total	**$(95.6)**

1/ Combined data for Chicago/Cincinnati and Cincinnati/Wash. D.C./Newport News routes
2/ Experimental routes
3/ Includes Section 403(b) service in Boston/Springfield and Philadelphia/Harrisburg
4/ Section 403(b) service
*Proposed to be discontinued.

proof is that the system we have been discussing with the DOT and the OMB and the Congress isn't very different from the system we began with. Even if we drop certain services—if we're permitted to do that by the ICC—we will still be operating more route miles and more trains than we were operating in the basic system in May 1971. So in a sense people have bought the experiment by agreeing to continue it.

RA: You're looking forward to a good third year in terms of ridership?

Lewis: I think the signs are all go. I think the railroad is going to grow.

That is not to say we don't have some big problems. There's the question of costs, and we're going to talk to the railroads about that. We are certainly going to talk to the railroads about performance. The contract that we signed with the railroads was not a bad contract. But we have learned some things we want, and railroads have learned some things they want. The contracts probably ought to be reviewed. It's only the cost provisions that are reopenable, but whenever you get into costs you always get into other things. I think our main concern is that we have not clearly spelled out performance standards, and that we don't have incentives for doing better or penalties for doing worse.

If we want to improve performance standards beyond the levels possible on May 1, 1971, then we may have to give the railroads the money, or furnish them the equipment. If it's a problem of holding performance to the levels that were possible on May 1, then it's a matter of holding the railroads responsible. Now, we have some money for right of way improvements. It's unsatisfactory, I know, to fix up other people's property but there are certain places where the gain is going to be so significant that we're going to find a way to do it.

A SMOOTHER METROLINER RIDE

A big chunk of the $50 million which Amtrak has available for right of way improvement in FY '74 will go into the Northeast Corridor. But as Lewis has often observed, it isn't just track, but a track/truck combination, that provides a smooth ride. And Metroliner trucks are now coming in for attention.

The Federal Railroad Administration has just awarded a contract for the design, fabrication, testing and supply of improved trucks for the Metroliners. The $3.8-million project is being undertaken by the Ground Transportation Division of LTV Aerospace Corp.

"Redesign of the Metroliner trucks is contemplated as the most important step that can be taken to improve the quality of ride in these passenger cars," says Federal Railroad Administrator John W. Ingram. "Only when reliable and comfortable rail services are available to the public will rail passenger service be able to take its full place in the national transportation system."

Six competitive proposals were evaluated by FRA. As awarded, LTV will test a newly designed Metroliner truck prior to fabrication of four prototypes. These prototype trucks will then be thoroughly road tested and the results evaluated. If the results meet expectations, it is FRA's intent to equip the remainder of the fleet with the new trucks; this will involve production of an additional 96 under the contract.

Actually, the LTV entry is a service-proven design from the Swiss firm of SIG, beefed up for service under the heavy Metroliner cars. Many of Swiss Federal Railway passenger coaches already have the SIG-ML truck or its predecessor design. In addition to the Swiss truck finally accepted, FRA also appraised other overseas designs.

Amtrak

SPRUCED UP INSIDE AND OUT, 1950-vintage Amtrak cars feature a combination of fresh appeal to today's traveling public and much greater operational reliability. Between December 1971 and April 1973, 626 cars were completely refurbished, with an additional 103 given some shop attention. Of the 626 about half received heavy repairs. About 50 cars a month are now going through various shops. It will take another 10-12 months to complete the refurbishing program. Amtrak is acquiring four new turbotrains (two from United Aircraft, two from ANF-Frangeco.

Old equipment gets new life and new look

Until new ones come along, refurbished locomotives and passenger cars are being called upon to provide Amtrak service with the vehicular attractiveness and comfort—and importantly, the reliability—that will enable it to thrive and grow. Currently, three railroad shops—Milwaukee Road's shop in Milwaukee; Seaboard Coast Line's, in Jacksonville, Fla.; and Illinois Central Gulf's Paducah (Ky.) shops—are engaged in the task of completely reworking vital components, replacing some, and giving 15-to-20-year-old Amtrak locomotives a thorough spruce-up. A fourth shop, located in the East, is expected to join these three in the refurbishing program at some time in the future.

Amtrak's 1,200-unit fleet of stainless steel passenger cars, mostly post-World War II vintage, is undergoing refurbishing at nine locations, some railroad-operated and the others commercially-operated. Performing this work are: Santa Fe's Topeka (Kan.) shops; Burlington Northern's Como Shop, St. Paul, Minn.; ICG's Woodcrest Shop, south of Chicago; Penn Central's Beech Grove Shop at Indianapolis; Jacksonville (Fla.) Terminal Co., in cooperation with Hoover Industries; Pullman-Standard, Chicago; Hamburg Industries, Hamburg, S.C.; Auto-Liner, Omaha, Neb.; and Rohr Systems, Mira Loma, Calif.

● **More than a facelift.** Neither the locomotive program nor the one for the cars should be regarded as merely stopgap, glossed-over efforts at a superficial lift. At the Milwaukee Road shops, for example, 17-year-old, 2,4000-hp E9 passenger locomotives, part of Amtrak's 262-unit fleet, are emerging from the assembly station with at least another 15 years of service life built into them. Performance of the units that have been coming out of the Milwaukee Road shops at the rate of one a month since the first of the year has been superior. These first of 13 units contracted for refurbishing at the Milwaukee location are operating the St. Louis-Chicago-Milwaukee run (and sometimes to the Twin Cities). And, says David C. Goehring, Amtrak's general superintendent-locomotives, "They're proving themselves to be Class One passenger train haulers."

In a way, the units emerging from all three shops doing the Amtrak work are probably much better performers than when they were new. Some of the more notable improvements the Milwaukee Road shop is making are:

—Installing 645E cylinder assemblies in modified and reconditioned Model 567 engines.

—Upgrading the traction motors to D77 status.

—Equipping each unit with a pair of rebuilt steam boilers.

—Replacing all the wiring, about 3½ miles of it.

—Increasing fuel capacity by 25%.

—Fitting exhaust manifolds with retention type internal spark arrestors.

New devices which were unknown when the E9 was first designed are being incorporated into various systems of the refurbished units. Magnetic switch-gears, emergency fuel trip systems, compatible electric and pneumatic sanding system, retention type rather than flush toilets—these and scores of other examples of new technology are part of the latter-day units. Furthermore, certain weaknesses in the original design are being corrected. "No locomotive is ever designed perfectly," advises R.J. Donovan, Milwaukee Road's supervisor-diesel maintenance. "Over the years we've been able to determine the weak areas of the original design, and now we're correcting them in this program."

Milwaukee Road is, in fact, stripping each unit down to its bare skeleton. Trucks are disassembled and completely reworked, body work is performed where necessary, and eventually—after everything is put back in its designated place and Amtrak's colors and logo are added—a unit still rated at 2,400 hp, but fully capable of generating a lot more

COMPLETELY REBUILT, a 17-year-old Amtrak locomotive emerges from the Milwaukee Road's shops in Milwaukee with another 15 years of service-life built into it. New wiring throughout—about 3½ miles of it—will give a tremendous boost to the reliability of the rebuilt units. Of Amtrak's 262 locomotives, 31 have been overhauled and five completely rebuilt. Fifty Electro-Motive E-type locomotives are scheduled for rebuilding. An additional 21 diesels and 21 electrics are leased. Amtrak has ordered 40 new diesel-electrics from EMD and 15 new electrics from General Electric.

than that, is ready for load test and finally, intercity service. At a cost equal to about half that of a new unit, Amtrak has acquired a locomotive that can haul seven or eight cars without even straining.

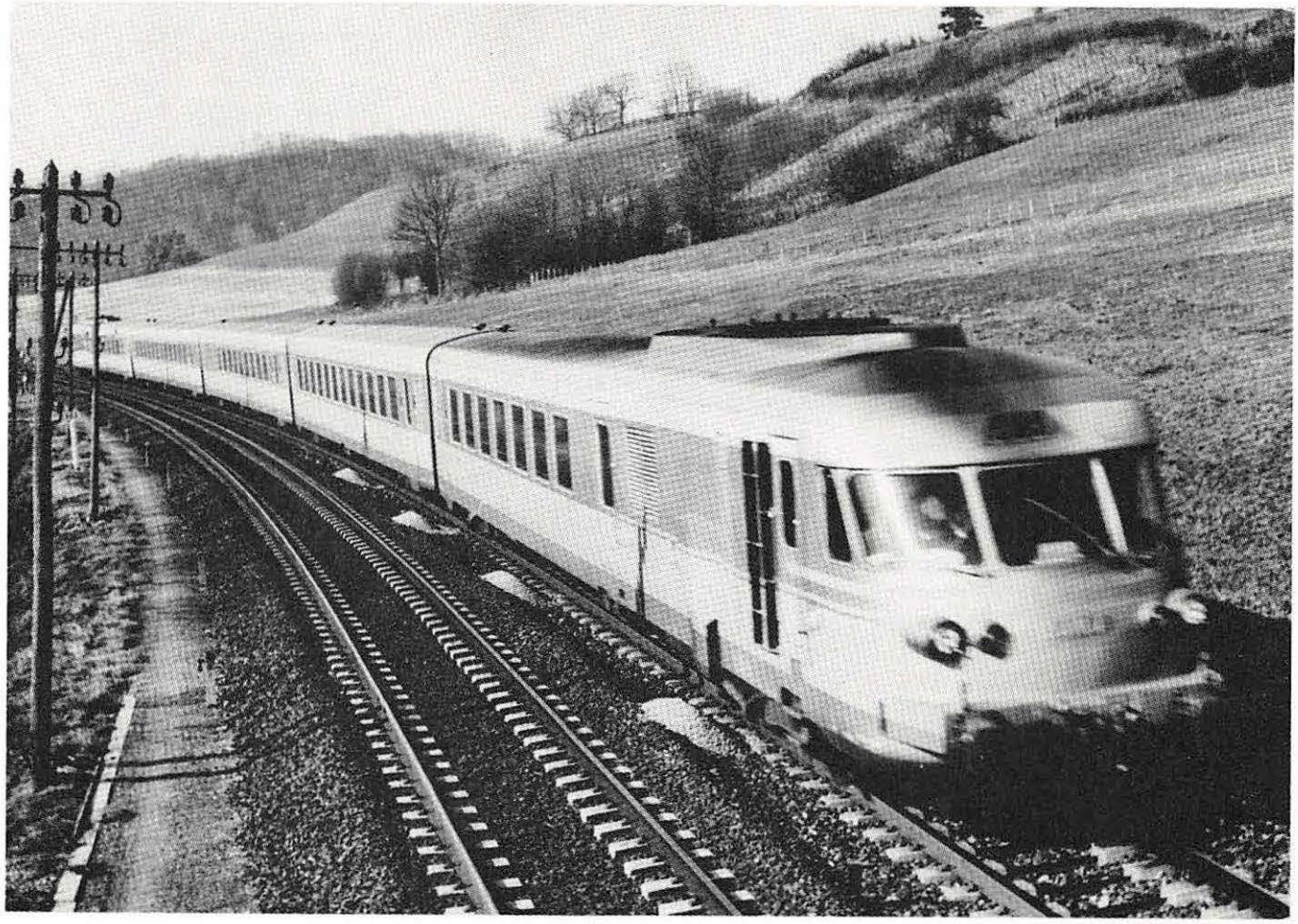
● **"Better reliability."** The car-refurbishing program although not as extensive or involved as the locomotive program, is, nevertheless, every bit as effective. The work being performed at the Pullman-Standard plant in Chicago is typical of what all the car shops—both railroad and commercial—are doing. Cars of all types—chair cars, baggage-dormitory cars, lounge cars, and so forth—are entered in the program. Before they leave the shops they have been assigned to for the refurbishing, each of the cars undergoes a complete examination inside and out. As happens with the locomotives, all trucks are dissassembled and re-worked. All "rotating" equipment is removed, examined and replaced or re-worked before going back on the car. Truck springs are calibrated, certain parts are magnafluxed, brakes are thoroughly examined, couplers are checked, batteries are replaced, diaphragm canvas is replaced, and so forth. Actually, there is probably as much work done beneath the car and in areas that passengers will never see as there is in the areas where people will have direct contact. All this type of work adds up to better reliability, and that's one of Amtrak's major goals in the program.

Inside, seats are being renovated and fitted with new covers, windows and window shades are being put in first class shape, exposed surfaces are getting a new coating of paint, floors and wainscoting are being carpeted and, all in all, each car is being "jazzed up" to appeal to today's traveler. Airliner influence is evident in many areas and perhaps even a little bit of the Auto-Train spirit has been picked up. For example, the seating in the coach-bar cars is a rich purple, a color which Auto-Train used with rare abandon—and very effectively—in its cars.

Amtrak is fortunate to have shops in various parts of the nation that are capable of performing the high-caliber refurbishing work needed to improve the standards of its existing equipment. Having engaged in extensive rebuilding programs on their own 1950-era freight locomotives, the three shops with the Amtrak locomotive refurbishing contracts have been able to ease into the work with relatively few problems. The Milwaukee Road is coming off a year in which it completely re-worked 18 GP-9 freight units. Meanwhile, ICG has perhaps one of the most ambitious ongoing rebuild programs for freight units in the railroad industry today.

Although P-S hasn't built a new mainline passenger car since the early '60s, it has been able to keep active in the field of passenger-equipment construction by building commuter and transit cars. As a matter of fact, the Amtrak cars at the P-S plant are being refurbished in the company of commuter cars (both new and rebuilt) for service on the Erie Lackawanna, and gas turbine/electric cars in the early stages of construction for Garrett Corp. Meanwhile, preparatory work for the start of construction of a huge 752-car rapid transit order for the New York City Transit Authority is quite evident. P-S is geared to handle 160-200 Amtrak cars a year.

The total cost of Amtrak's car and locomotive program is estimated at $60 million through FY 1974. ■



This is the French gas turbine train Amtrak has chosen.

On February 28, 1973 Amtrak contracted with ANF-FRANGECO Paris for delivery of two of the latest Turbo-powered trainsets: the "RTG". They are destined for the Chicago-Milwaukee and Chicago-St. Louis runs.

ANF-FRANGECO built the ETG and RTG gas turbine trainsets for SNCF-French National Railways. ETG trains have already totalled over 5 million miles on the regular Paris-Caen and Paris-Cherbourg service during the past two years.

By courtesy of the SNCF two trains of the current completely air-conditioned five-car RTG production series will be released to Amtrak during Summer 1973.

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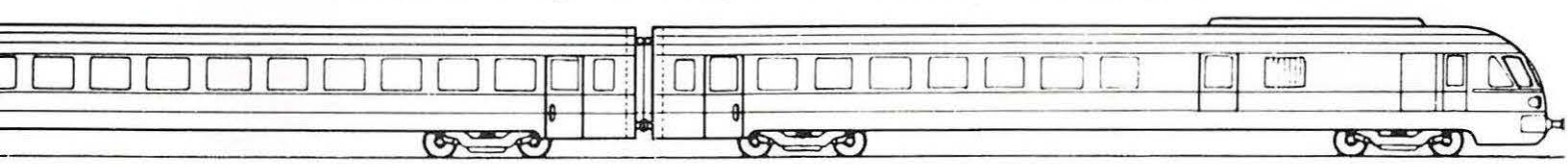

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People in the News

ALLEGHANY CORP.—**Theodore E. Somerville** has been elected vice president and counsel, New York. Mr. Somerville, who has been an attorney with Donovan Leisure Newton & Irvine, a New York law firm which is general counsel for Alleghany, will be responsible for legal matters. He will also have responsibility for communications, corporate, public and shareholder relations. In the latter capacity he succeeds **Clifford H. Ramsdell**, who has retired as vice president-corporate relations and as a director.

ASSOCIATION OF AMERICAN RAILROADS.—**Thomas A. Phemister** named assistant general attorney and **John B. Norton** appointed attorney, Law Department.

Dr. Max P. Rogers, chief surgeon, **Southern**, elected chairman, AAR Medical Section, succeeding **Dr. Alexander McEwan**, chief medical officer, **Burlington Northern. Dr. Robert W. Edmonds**, medical director, **Norfolk & Western**, elected vice chairman, AAR Medical Section.

BURLINGTON NORTHERN.—**E.R. Craven**, assistant vice president, safety and rules, appointed assistant vice president, operations, safety, rules and prevention services, St. Paul.

Curtis J. Hockaday appointed assistant vice president, energy, metallics and chemicals, market development division, marketing department, to succeed **Thomas C. Kryzer**, named vice president, energy and minerals, Billings, Mont. (RA, Mar. 26, p. 47). Mr. Hockaday was formerly assistant vice president, pricing in the marketing department's pricing division.

R.L. Lassiter, regional sales manager, Fort Worth, Tex., named to the newly established position of assistant vice president-regional sales manager there.

CHESSIE SYSTEM.—**William J. Eck**, vice president for purchases and materials, Baltimore, Md., is retiring after 45 years of service.

CHICAGO & NORTH WESTERN.—**Donald P. Cape**, market manager-construction materials, promoted to general market manager. **William A. Kluender**, market manager-ores and metals, advanced to general market manager-industrial minerals, paper and pulpwood.

J.R. Iwinski appointed bridge engineer, Chicago, to succeed **William Wilbur**, who retired Feb. 28. after 44 years' service.

John P. Toren, market manager-primary metals, named general market manager. **Ronald P. Hazen**, manager-equipment planning, appointed market manager-construction materials. **Stuart H. Thomson**, formerly product manager-equipment development, **Chessie System**, succeeds Mr. Hazen.

FRISCO.—In a reorganization of the Operating Department, **T.M. Galloway**, general superintendent transportation, named to the newly created position of assistant chief transportation officer in charge of freight car distribution and control. **J.C. Cowles**, superintendent, Eastern division, succeeds Mr. Galloway. **G.R. Clinkenbeard**, director transportation service and planning, appointed assistant chief transportation officer in charge of planning, quality and cost control, also a new position. **F.E. Wait**, superintendent transportation, appointed superintendent Eastern division, North-South, and **C.C. Lane**, superintendent terminals, becomes superintendent Eastern division, East-West. The above will continue to make their headquarters at Springfield, Mo. **M.M. Brower**, assistant superintendent, Tulsa Terminal, succeeds Mr. Lane, and in turn is succeeded by **J.E. O'Hearn**, trainmaster, Memphis Terminal. Mr. O'Hearn's successor is **E.H. Harrison**, assistant trainmaster, Southern division. **R.S. Fuller**, superintendent, Southwestern division, named superintendent Southwestern division-North, and **B.J. Lutzenberger**, assistant superintendent, Springfield Terminal, appointed superintendent Southwestern division-South, both with headquarters at Tulsa, Okla. **W.H. Hulsey**, assistant superintendent, Memphis Terminal replaces Mr. Lutzenberger, and in turn is replaced by **J.K. Vaden**, trainmaster, Hugo, Okla. **R.L. Buchanan**, superintendent, Southern division, appointed superintendent Southern division-South and **C.B. May**, trainmaster, Amory, Miss., superintendent Southern division-North, both at Memphis. Mr. May's successor is **W.F. Deaton**, trainmaster-general agent, Pensacola, Fla., who in turn is succeeded by **M.L. Thornbrough**, trainmaster,

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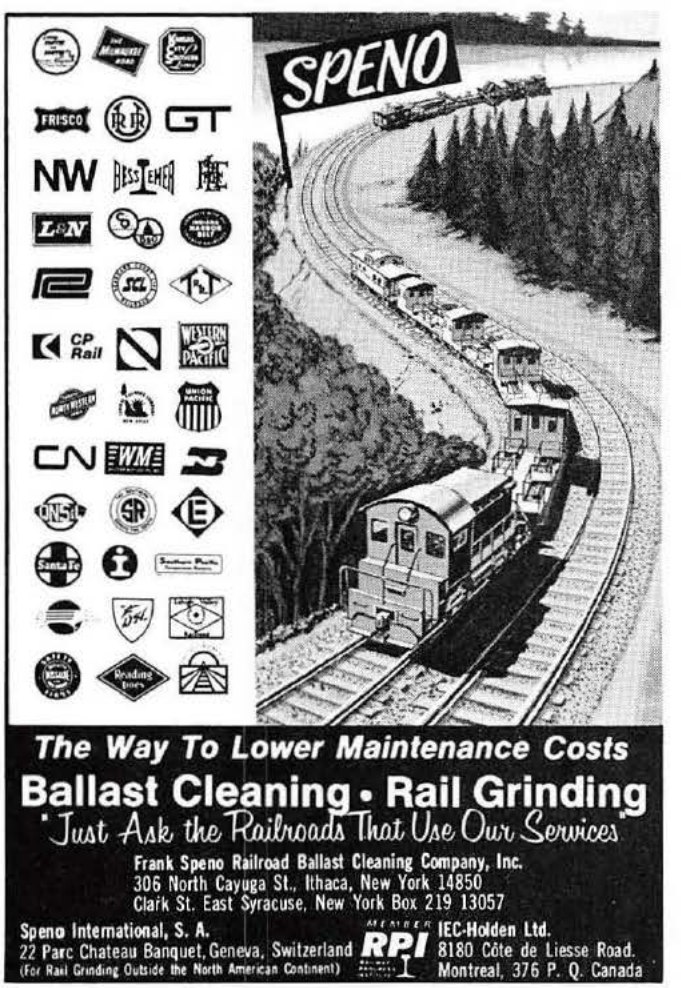
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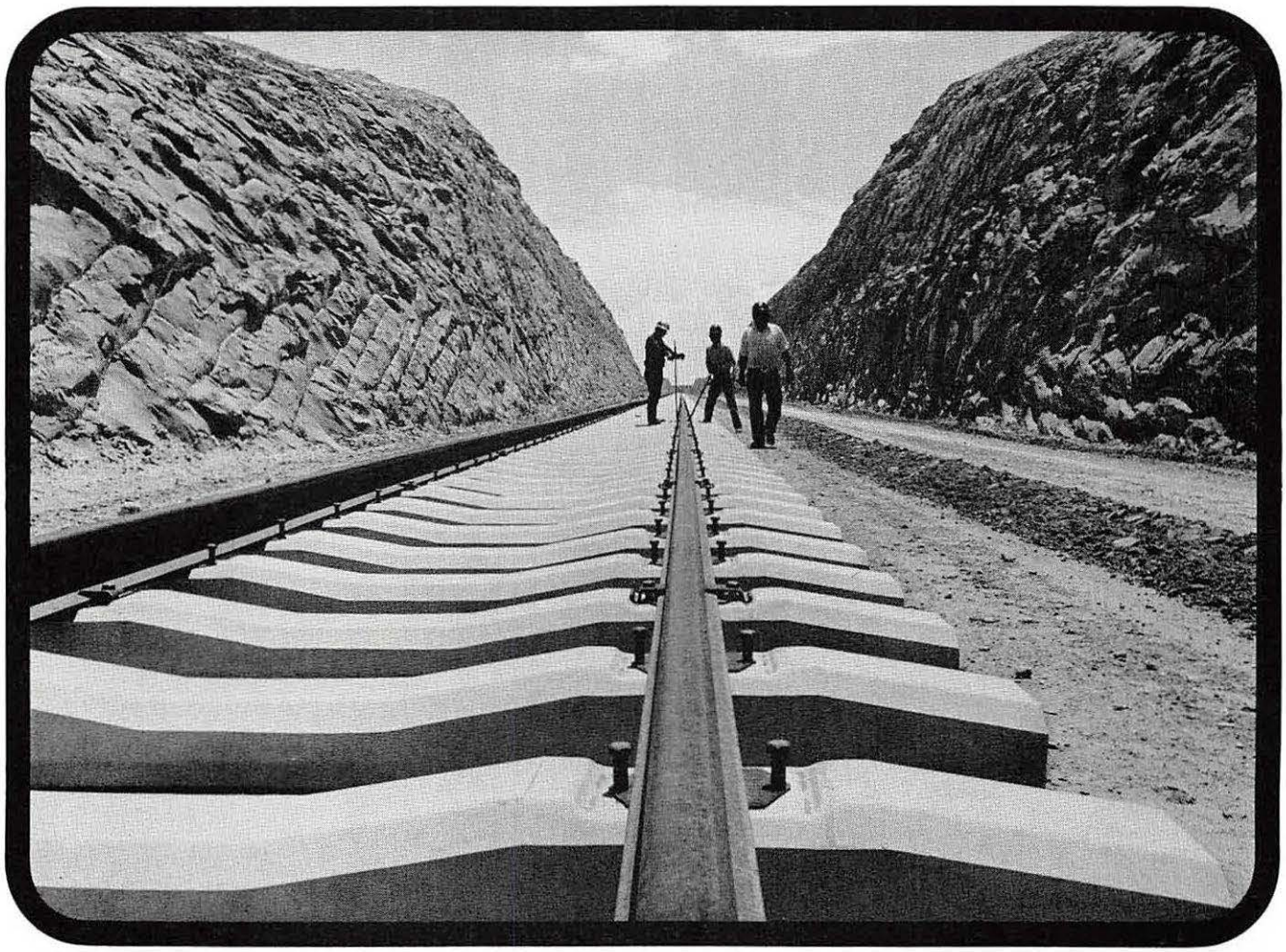

Super tracks in the west.

New, unprecedented Black Mesa and Lake Powell Railroad will span 78 miles of desert country on CF&I rails, welded in quarter-mile lengths. Another example of CF&I involvement in railroad pioneering.

Across the rugged Arizona landscape that could belong to the last century, they're building a railroad that could belong to the next. It will be the first 50-kV railroad system in the world. Train operation will be fully automated—and every inch of rail is CF&I.

About those quarter-mile lengths of CF&I rail: the bulk of it is being welded right in the work yard of the contractor, Morrison-Knudson Company, Inc.—then hauled to the rail-laying site in special flat cars.

Behind this mine-to-generating plant railroad is the Navajo Generating Station and Railroad Project. The Salt River Project is managing the engineering and construction for the participants consisting of five power companies and the Federal Bureau of Reclamation.

There are a lot of other fascinating details—and a good deal more you should know about the uniformly high quality and other factors that determined the choice of CF&I to begin with. Or why CF&I rail is easier to weld.

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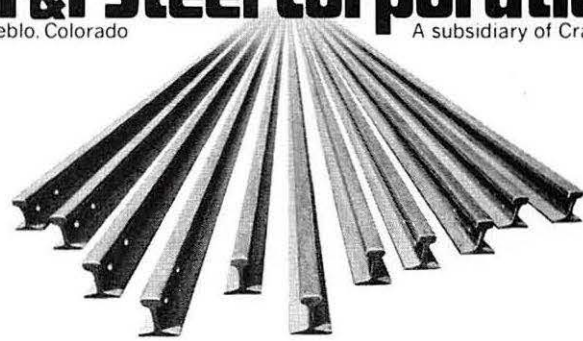

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Blytheville, Ark. **J.E. Grady,** trainmaster, Kansas City, Mo., Terminal, named to the newly established position of assistant superintendent transportation, Springfield, **G.M. Kirk,** general agent and trainmaster, Joplin, Mo., replaces Mr. Grady, and in turn is replaced by **D.W. Patton,** trainmaster, Springfield and Clinton Subs. Mr. Patton's headquarters are at Springfield. **C.P. Battaile,** rules examiner, named superintendent rules, Springfield. **H.L. Buckner,** trainmaster-general agent and mechanical foreman, appointed trainmaster, Wichita, Burrton and Carthage Subs, Wichita, Kans. **R.E. Townes,** assistant trainmaster, St. Louis Terminal, becomes trainmaster, Arkinda, Ardmore and Arthur Subs and general agent, Hugo, Okla. **W.J. Essner,** assistant to general superintendent transportation, appointed assistant to chief transportation officer, Springfield.

GRAND TRUNK WESTERN.—**Paul E. Tatro,** controller, Detroit, assigned the additional post of treasurer, succeeding **C.A. Dobbins,** retired. **Vincent F. Pompilius,** chief methods analyst, appointed assistant treasurer.

NORFOLK & WESTERN.—Has established three regional piggyback offices: At Chicago, **Maurice W. Gramann,** manager, western regional office; at Cleveland, **Jack V. Morrow,** manager, central regional office; and at Roanoke, **Bernie A. Moorhead,** manager, eastern regional office.

Staff reassignments include **Donald R. Morgan,** manager of motor carrier interline sales and service, St. Louis; **Arthur R. Pollock,** general manager-staff, Roanoke; and **Charles M. Hawkins,** manager of intermodal sales and service, Roanoke.

Donald F. Patterson, trainmaster, Norfolk, transferred to Lafayette, Ind. **John A. Rehor,** superintendent of safety, Roanoke, named trainmaster, Norfolk terminal. **Edward Hurley,** road engineer, Radford Division, named superintendent of safety, Roanoke.

Henry C. Wolf appointed senior tax attorney, Roanoke. **James A. McCloskey,** solicitor, St. Louis, promoted to assistant general attorney.

Stephen C. Tobias, general yardmaster, Toledo, appointed terminal trainmaster, Bellevue, Ohio. **Clyde A. Mays, Sr.,** succeeds Mr. Tobias at Toledo.

Donald S. Haga, William R. Kinsey and **Charles S. Wilkerson** named assistant managers of motive power and equipment, System Operations Center, Roanoke, **William E. Honeycutt,** mechanical supervisor-locomotive, replaces Mr. Haga as assistant manager of motive power and equipment-locomotive. **Bernie O. Vaden,** gang foreman-locomotive department, succeeds Mr. Honeycutt. **William K. Ramsey,** assistant mechanical superintendent, Decatur, Ill., succeeds Mr. Kinsey as superintendent Roanoke Locomotive shops. Mr. Wilkerson was formerly master mechanic-locomotive, Shaffers Crossing, Roanoke.

SUPPLY TRADE

James J. Malatras has been appointed president, **Berwick Forge & Fabricating Division,** Whittaker Corp., at Berwick, Pa. Mr. Malatras joined Whittaker Corp. in Aug. 1972 as a corporate staff specialist, Bishop Tube Division, Malvern, Pa.

James J. Malatras
Berwick

Richard P. Herman
Miner

Richard P. Herman, vice president, **W.H. Miner Division, Miner Enterprises,** Chicago, named president, to replace **William J. Trongeau,** retired.

Joseph C. Janke has been appointed manager-marketing department, **Westinghouse Air Brake Division** of **WABCO,** Pittsburgh. He will be responsible for all marketing planning and strategy, including pricing, product line management, advertising and sales promotion, forecasting and customer service for railroad and mass transit activities. **George E. Carothers,** vice president-sales of the division, named head of the reorganized sales department, with responsibility for the direct supervision of all railroad and mass transit field sales personnel. **Carl D. Wright, Jr.,** manager-mass transit engineering, has been appointed manager of engineering, replacing Mr. Janke. **David T. Kerr,** general sales manager for the division, has been appointed manager of materials control, a new position in the manufacturing department.

E.F. Leonard has joined the Signal & Communications staff of **Western-Cullen Division, Federal Sign & Signal Corp.,** Chicago. **Robert T. Sewell** has been named product manager, signal and communications equipment. Mr. Leonard was formerly documentation engineer, Marketing Communications Department, **WABCO** Signal & Communications Division. Mr. Sewell formerly served in the Signal & Communications Department, **Western Pacific.**

L.I. Dillenbeck, manager data systems, **ACI Systems Corp.,** South Holland, Ill. has been appointed assistant to the president. **R.L. Casson,** formerly with Peat, Marwick & Mitchell, appointed director of systems facilities and operations. **L. Bruce Mardis, Sr.,** formerly with Cybernetics & Systems, appointed director of systems and procedures. **Dean E. Smith** named product manager.

Robert I. Geary has been named vice president, **Erman Corp., Inc.,** with headquarters in Chicago. He was formerly in charge of the Kansas City, Kans., plant.

OBITUARY

W.T. Blake, 75 inventor of the **Freight-Master** cushioning systems, died April 21 after a short illness.

Walter R. Nugent, 61, controller, **Western Railroad Association,** died April 11 in Chicago.

Why for a

Servo is the world's leading producer of electronic hot box detector systems.

We're not experts in every phase of railroad safety — but as the industry's pioneer designer and producer of electronic hot box detection systems, we can claim a high level of successful experience in working on the problems of bearing failures, axle burn-offs and derailments associated with undetected hot boxes.

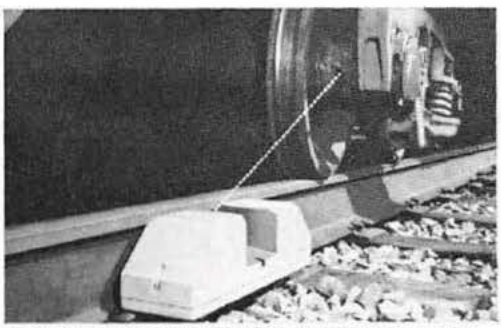
Since 1957, more than 1,800 SERVOSAFE Hot Box Detective Systems have been put into service, and have compiled an unequaled record of safety improvement, more efficient preventive maintenance procedures and cost reduction.

Hot box detectors available from Servo offer the widest flexibility in choice of system configuration, features and functional options, including: rail-mounted or ballast-mounted scanner; a complete selection of ancillary and test equipment; solid-state electronic signal processing. Several modes of data read-out are also available — automatic digital read-out at trackside or remote location; pen-paper recorder chart for visual interpretation; FM carrier data transmission over unlimited distances.

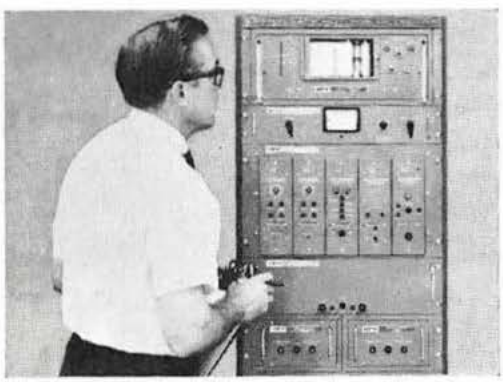
With our broad range of products and world-traveling network of field engineers, we can readily "customize" the design, manufacture, installation and operation of a SERVOSAFE System to best meet the particular requirements of your railroad.

You are invited to contact us for complete descriptive literature, or to arrange a field engineering site survey and application review — without obligation, of course.

spend the capital SERVOSAFE® system?



Rail-mounted scanner "looks" at and measures the heat radiated by passing journal boxes.



Solid state electronic data processing equipment, with permanent record chart recorder.

Trackside display board gives digital read-out of hot box location.

BECAUSE SERVOSAFE CAN REDUCE MAINTENANCE COSTS. Journal box and wheel set maintenance represent substantial costs each year. Part of these costs is due to normal bearing wear as cars age. Much higher costs, however, are involved when equipment is needlessly damaged by continued operation after lubrication has failed—causing major salvage jobs or replacement of wheel sets.

Where SERVOSAFE Systems are used for early detection, experience has shown that only 1 out of 10 hot boxes required a wheel set replacement. With other methods, as many as 9 out of 10 that came in for repair required new wheel sets.

BECAUSE SERVOSAFE CAN REDUCE LABOR COSTS. With SERVOSAFE providing an automatic and more precise method of inspecting journal boxes, railroads have been able to significantly reduce the number of personnel formerly required for manual and visual inspection of wheel journal boxes.

BECAUSE SERVOSAFE CAN MORE THAN PAY FOR ITSELF. Obviously, the single most important reason to make a capital investment in SERVOSAFE is to decrease the fearsome prospect of one of the greatest capital losses a railroad faces: a derailment caused by a bearing failure. The total cost of a derailment cannot be determined in advance, but it is not unrealistic to estimate that one serious derailment could cost a railroad more than 20 times the investment in a SERVOSAFE System. That's why most railroads agree that SERVOSAFE protection isn't costly—*lack of it is!*

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Hicksville, N.Y. 11802 Tel. 516-938-9700
European Office: Lausanne, Switzerland

SERVING SAFETY THROUGH SCIENCE

Circle 16 on coupon page 45

MEMBER RPI

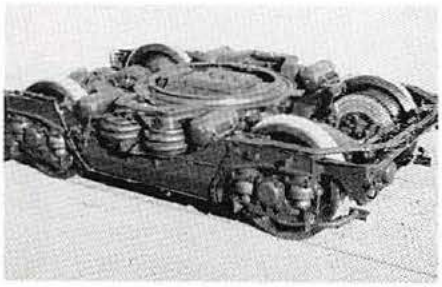
Fourth Quarter and Twelve Months' Figures of Calendar Year 1972

(Dollar figures are stated in thousands: i.e., with last three digits omitted)

Name of Road		Operating Revenues: Freight	Other	Total 1972	Total 1971	Operating Expenses: Maint. of Roadway and Structures: Total 1972	Total 1971	Deprec. and Retirements	Maint. of Equipment: Total 1972	Total 1971	Deprec. and Retirements	Traffic	Transportation	Total 1972	Total 1971	Operating ratio 1972	Operating ratio 1971	Railway tax accruals	Railway operating income 1972	Railway operating income 1971	Net income 1972	Net income 1971
Akron, Canton &	3 mos.	1,917	85	2,002	1,668	436	263	27	392	324	125	91	840	1,891	1,554	94.5	93.2	157	46–	114–	29	21
Youngstown	12 mos.	7,358	256	7,614	7,220	1,379	1,422	90	1,508	1,586	499	363	3,150	6,917	6,866	90.8	95.1	851	154–	545–	81	37–
Amtrak	3 mos.	–	40,066	40,066	36,837	1,090	2,029	–	14,210	17,044	699	6,477	35,407	75,070	70,829	187.4	192.3	3,579	38,583–	38,360–	40,512–	39,749–
	12 mos.	–	162,580	162,580	100,924	4,958	4,929	–	60,001	45,003	3,211	20,177	129,404	286,339	178,593	176.1	177.0	16,393	140,152–	88,184–	147,511–	91,578–
Ann Arbor	3 mos.	2,622	71	2,693	2,951	513	362	24	455	469	161	38	1,369	2,487	2,498	92.3	84.7	200	6	250	474–	304–
	12 mos.	10,588	415	11,003	10,860	1,621	1,647	94	2,322	2,009	649	208	5,625	10,240	9,990	93.0	92.0	823	60–	61	1,958–	1,665–
Atchison, Topeka	3 mos.	207,383	11,380	218,763	195,408	34,772	29,136	5,078	42,193	40,535	10,848	4,969	77,754	169,701	153,579	77.57	78.59	19,993	29,069	28,246	22,616	17,422
& Santa Fe	12 mos.	794,005	37,690	831,695	779,365	132,826	118,477	16,230	164,046	155,951	43,249	19,197	293,412	647,310	606,522	77.83	77.82	78,481	105,904	103,792	80,866	19,677
Auto-Train	3 mos.	–	3,334	3,334	–	297	–	30	575	–	79	205	828	2,523	–	75.7	–	101	709	–	288	–
	12 mos.	–	12,197	12,197	–	1,344	–	106	1,729	–	298	765	3,740	10,432	–	85.5	–	510	1,264	–	1,342–	–
Baltimore & Ohio	3 mos.	128,977	4,903	133,880	108,862	20,045	15,766	1,954	17,360	16,342	2,902	2,881	49,088	97,364	85,609	72.7	78.6	9,205	27,310	16,312	1,451–	42,974–
	12 mos.	484,832	17,549	502,384	495,812	69,645	64,966	7,700	67,566	79,843	11,767	11,071	187,676	367,697	375,212	73.2	75;7	36,009	98,677	86,432	10,445	34,173–
Bangor & Aroostook	3 mos.	3,414	199	3,613	3,208	1,018	850	58	1,230	1,165	469	94	1,142	3,763	3,371	104.2	105.1	263	413–	442–	754	1,793
	12 mos.	13,060	693	13,752	12,730	3,768	3,445	353	5,114	4,377	1,839	341	4,443	14,720	13,169	107.0	103.4	1,232	2,200–	1,612–	2,057	2,627
Bessemer & Lake	3 mos.	12,162	1,126	13,288	9,141	1,643	1,417	156	1,710	1,564	475	177	3,245	7,848	6,533	59.06	71.47	2,948	2,492	5,319–	2,533	1,066–
Erie	12 mos.	43,917	3,683	47,600	48,577	7,772	5,415	600	10,625	8,504	2,058	689	12,014	35,377	30,374	74.32	62.5	6,903	5,319	6,875	5,371	6,404
Boston & Maine	3 mos.	16,221	3,607	19,828	19,005	2,859	2,741	240	3,521	3,191	607	420	10,302	17,750	16,588	89.5	87.3	1,616	462	1,214	4,783–	2,094–
	12 mos.	64,272	13,026	77,298	76,632	13,404	11,456	1,689	13,230	13,325	2,424	1,590	37,209	69,289	64,977	89.6	84.8	6,373	1,636	5,872	11,641–	6,499–
Burlington Northern	3 mos.	252,632	12,535	265,167	238,301	39,906	39,786	4,321	45,205	45,521	10,849	6,861	108,978	216,119	202,308	81.5	84.9	19,860	29,188	17,238	17,666	6,435
	12 mos.	956,200	44,316	1,000,517	940,162	158,831	146,081	18,988	176,344	168,452	44,737	25,508	407,002	827,621	778,535	82.7	82.8	85,852	87,044	81,309	40,961	36,542–
CPR Lines in Maine	3 mos	1,899	88	1,987	1,802	394	379	66	414	364	47	51	800	1,800	1,680	90.6	93.2	107	80	17	–	–
	12 mos.	8,491	395	8,886	6,820	1,861	1,546	261	1,674	1,456	187	244	3,198	7,504	6,814	84.5	99.9	400	981	363–	–	–
Central of Georgia	3 mos.	19,877	593	20,470	18,524	3,130	4,499	761	3,302	3,274	950	417	5,878	13,640	15,258	66.6	82.4	2,930	3,900	3,036	2,335	1,578
	12 mos.	79,093	2,173	81,266	69,596	13,262	14,099	2,150	12,736	11,732	3,830	1,572	22,784	53,969	51,893	66.4	74.6	11,189	16,108	10,662	10,861	6,043
Central RR of	3 mos.	7,024	2,884	9,908	11,873	1,146	1,728	214	1,526	2,256	247	189	4,926	8,720	10,792	88.0	90.9	918	270	85–	1,964	3,215–
New Jersey	12 mos.	29,779	11,726	41,504	51,526	5,193	6,537	883	7,418	8,514	1,097	815	21,757	39,015	42,904	94.0	83.3	3,987	1,498–	4,104	5,501–	5,419–
Central Vermont	3 mos.	2,464	111	2,575	2,362	964	561	314	286	226	46	25	1,224	2,564	1,936	99.6	82.0	187	176–	219	141–	78
	12 mos.	9,634	428	10,062	9,287	2,577	1,972	477	846	840	88	100	4,350	8,193	7,092	81.4	76.3	785	1,083	1,458	596	1,127
Chesapeake & Ohio	3 mos.	110,46	3,835	113,981	91,133	9,814	13,778	605	20,642	18,451	6,271	2,842	44,031	85,290	80,612	74.8	88.5	10,046	18,646	11,547	3,988	9,353–
	12 mos.	434,701	16,629	451,330	455,202	52,414	60,978	6,234	80,679	93,960	25,015	10,128	171,429	343,949	367,166	76.2	80.7	41,694	65,687	58,752	32,869	12,985
Chicago & Eastern	3 mos.	9,834	157	9,991	9,047	1,396	1,828	149	1,432	1,381	371	307	2,727	6,317	6,611	63.2	73.1	962	2,712	1,761	1,276	21–
Illinois	12 mos.	38,968	610	39,578	35,275	7,381	7,102	415	6,838	6,273	1,473	1,236	11,948	29,167	27,720	73.7	78.6	3,315	7,096	5,517	2,715	1,273
Chicago & North	3 mos.	85,269	10,015	95,284	–	11,591	–	498	14,340	–	3,124	2,444	39,588	77,667	–	77.3	–	5,969	15,649	–	7,927	–
Western	12 mos.	193,422	23,010	216,432	–	28,257	–	66–	31,396	–	7,280	5,328	90,025	167,337	–	77.3	–	15,279	33,815	–	11,600	–
Chicago Milwaukee	3 mos.	77,106	5,512	82,618	75,699	15,996	12,474	2,444	12,094	13,288	2,400	2,152	32,982	68,327	61,216	82.7	80.9	6,300	7,990	9,007	344	14,206–
St. Paul & Pacific	12 mos.	292,170	20,662	312,832	295,751	57,803	49,179	7,216	51,166	49,760	11,454	8,601	128,835	265,411	243,113	84.8	82.2	26,362	21,059	28,007	8,643–	22,196–
Chicago Rock Island	3 mos.	73,011	4,122	77,133	72,043	10,788	8,127	480	12,829	13,184	1,603	2,049	33,206	62,745	55,398	81.3	76.9	4,609	9,778	12,187	1,306–	2,043
& Pacific	12 mos.	288,216	17,074	305,290	291,808	43,457	39,024	4,075	53,738	53,043	6,489	8,218	125,357	246,338	232,291	80.7	79.6	20,633	38,391	39,778	5,855–	6,415–
Clinchfield	3 mos.	9,419	143	9,562	8,561	1,032	879	123	1,554	1,929	647	289	2,834	6,078	5,818	63.6	68.0	819	2,664	1,928	–	–
	12 mos.	39,819	396	40,215	37,877	4,381	4,223	376	6,674	6,872	2,607	1,139	11,229	24,814	24,062	61.7	63.5	3,291	12,109	10,510	–	–
Colorado & Southern	3 mos.	7,094	181	7,275	6,503	994	672	37	1,152	1,153	468	15	2,850	5,387	4,607	74.0	70.8	439	1,450	1,498	–	–
	12 mos.	26,467	714	27,181	24,107	3,041	2,440	180	4,061	3,821	1,712	74	9,948	18,640	15,956	68.6	66.2	1,799	6,743	5,685	–	–
Delaware & Hudson	3 mos.	10,722	254	10,976	10,549	1,212	1,364	153	1,985	2,515	393	309	3,784	7,955	9,106	72.5	86.3	1,362	1,660	49	2,962	1,681–
	12 mos.	40,908	925	41,833	44,739	4,901	5,983	547	8,570	9,473	1,582	1,247	15,953	33,279	37,130	79.6	83.0	5,892	2,662	1,796	1,068	2,477–
Denver & Rio Grande	3 mos.	29,310	533	29,843	26,156	4,234	2,853	1,733	4,291	4,474	1,418	971	9,662	20,901	18,351	70.0	70.2	4,596	4,346	4,200	4,475	4,259
Western	12 mos.	109,074	2,697	112,671	109,541	13,945	12,106	3,284	17,175	17,183	5,580	3,904	35,852	77,572	72,845	68.8	66.5	17,762	17,337	18,442	17,036	15,529

(Continued on page 47)

New Products Report



Single motor featured in transit truck

A transit truck having a single traction motor geared to both axles is being built under license from Societe MTE, a major French supplier of railroad and transit equipment. Advantages of the mono-motor truck are claimed to be higher adhesion and economies in investment and maintenance. The truck is said to be a natural extension of propulsion packages produced by Westinghouse Electric and will be offered for sale in the U.S.

Circle 60 on reader service card

Piggyback loader provides on-site power system, cuts delivery time

A new piggyback loading system has been designed by Production Engineering Co. to provide an on-site power system for the loaders. The system, a pneumatic-hydraulic drive, utilizes the already-present compressed air system of the loading tractor unit. Using a quick-lock connector at the end of a 10-foot air hose, the driver or controller simply backs the ramp in place, connects the hoses, elevates the ramp, then moves the tractor and lowers the ramp in place. No costly electrical source and no cables are required. The system offers the added advantage of separate controls for each supporting piston leg, eliminating need for other leveling devices on any terrain. Because of the basic simplicity of design and operation of the Production Engineering loader, delivery time is cut significantly.

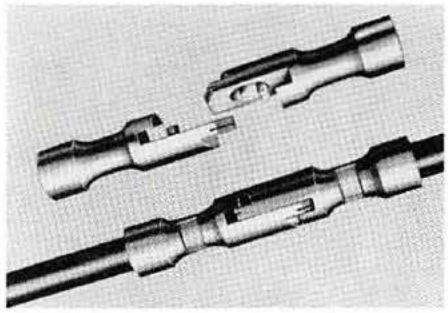
Circle 61 on reader service card

Field-welded rail joints are accurately profiled by grinder

The entire ball of a rail can be accurately contoured by a 137-pound machine which has been designated Model MP-12 Rail Profile Grinder by its manufacturer, L. Geismar. Located half way between two flanged support rollers, a cup-wheel grindstone produced high-precision work without any risk of over grinding.

Its 4.5-hp gasoline engine incorporates a special carburator and lubrication system which permits it to run safely in a vertical or horizontal position. The MP-12 is carefully balanced so that one man can operate it continuously without becoming overly tired.

Circle 62 on reader service card



Quick-disconnect terminals designed for rapid transit

Ampower quick-disconnect terminals are designed for rapid transit systems and where power cabling is used. The terminals, from AMP Inc., are applied with precision crimping dies to produce consistent and reliable terminals on large power cables and leads without need for soldering or brazing. The pin-and-groove design ensures positive engagement under severe shock and vibration, yet allows instant disconnection when needed.

Either hermaphroditic or polarized versions are available to accommodate

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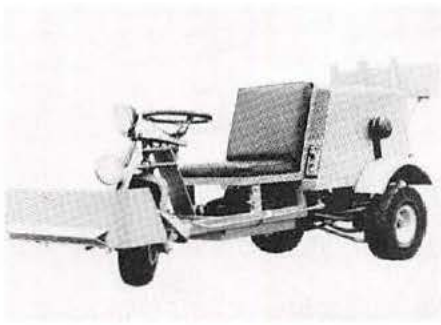
solid or stranded wires, or combinations of both, ranging from AWG No. 1/0 to 350MCM. The extended bell-mouth cable entry facilitates wire insertion during assembly and provides additional support for the terminated lead. An optional inspection hole in the crimp barrel permits quick visual indication of properly inserted cables. For low contact resistance over prolonged periods of continuous operations, the silver-plated brass terminals are designed to maintain high contact forces. The current rating equals or exceeds that of the cables being connected.

Circle 63 on reader service card

Diesel starting battery works at extremely low temperatures

A redesigned, heavy-duty, railway diesel starting battery offers high engine breakaway torque amperage for positive quick cranking. The battery—announced by Gould Inc.'s Industrial Battery Division—features a collection of design improvements, including a self-leveling sediment bridge which eliminates shorts in plates and results in long, trouble-free service life. An extra-large electrolyte supply reduces maintenance time, requires less watering and insures starting power even under extremely low temperature conditions.

Circle 64 on reader service card



Maintenance, inspection vehicle has many accessories

A 14-hp air-cooled gasoline engine and a hydrostatic split transmission system are among several special features of Defiance Mechanical's Yardbird Model 125 General Service Vehicle. Designed for trainyard maintenance and inspection, the vehicle has a single lever on control valve. The foot pedal provides neutral, forward, reverse and stop control. Several accessories, such as a tool box and gas bottle rack and a head light and work light, are included.

Circle 65 on reader service card

Alphanumerics can be shown on video terminal

Model 204 video terminal controller is a replacement for hardcopy data capture terminals and industrial display/controllers. As a replacement or add-on for TTY printers, this Ann Arbor Terminals unit provides soundless high-speed display of input data at asynchronous data rates to 1,200 characters per second. As a substitute for industrial display/controllers, it permits software control of data and data format.

The 204 is available with serial and parallel RO33- or KSR 33-equivalent interfaces, and features built-in buffer and refresh memories. It is capable of driving multiply displays, which may be either conventional TV sets or 525-line video monitors. The 64-character ASCII repertoire provides a 32 x 16 alphanumeric display in black/white or color, with switch-selectable PAGE or ROLL mode operation as standard.

Circle 66 on reader service card

NEW LITERATURE

NOISE CONTROL. Leaflets from the Noise Control Division of I.D.E. Processes Corp. describe such things as the company's noise insulated telephone enclosures. I.D.E. engineers and constructs a full range of noise control equipment.

Circle 70 on reader service card

AIR BRAKE HOSE SUPPORT SPRING. A Vapor Corp. bulletin describes the characteristics and specification of the new air brake shoe support spring. The unit supports air brake hose and couplings with the flexibility of rubber and the strength of steel.

Circle 71 on reader service card

CIRCUIT BREAKERS. Semi-high speed, electrically operated, low-voltage d-c power circuit breakers for use in railway and heavy industrial d-c systems are described in a bulletin prepared by Westinghouse Electric Corp.'s Switchgear Division. The illustrated bulletin presents complete application rating and construction information. List prices with attachments are included.

Circle 72 on reader service card

LEASE CALCULATOR. An interior equipment lease calculator is being offered by the Evans Products Co. The calculator will quickly figure the lease rate per month at three-, five- or seven-year terms; the lease extension rate and the purchase option price of the equipment at the expiration of the lease; and compute the economic advantages of leasing the equipment by month and per trip.

Circle 73 on reader service card

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Fourth Quarter and Twelve Months' Figures of Calendar Year 1972

(Dollar figures are stated in thousands: i.e., with last three digits omitted)

Name of Road		Operating Revenues				Operating Expenses												Railway tax accruals	Railway operating income		Net income	
						Maint. of Roadway and Structures			Maint. of Equipment							Operating ratio						
		Freight	Other	Total 1972	Total 1971	Total 1972	Total 1971	Deprec. and Retirements	Total 1972	Total 1971	Deprec. and Retirements	Traffic	Transportation	Total 1972	Total 1971	1972	1971		1972	1971	1972	1971
Detroit & Toledo	3 mos.	2,036	105	2,141	1,885	257	227	4	406	337	116	77	701	1,589	1,454	74.2	77.1	230	322	273	248	28–
Shore Line	12 mos.	7,798	467	8,265	7,762	906	840	52	1,399	1,299	465	302	2,615	5,776	5,467	70.0	70.4	1,218	1,271	1,240	816	581
Detroit Toledo &	3 mos.	10,803	377	11,181	9,481	1,272	853	80	1,940	1,846	443	304	4,102	8,319	7,054	74.4	74.4	622	2,239	1,740	1,011	564
Ironton	12 mos.	40,587	1,137	41,724	37,151	4,359	3,520	357	7,312	7,422	1,746	1,122	15,394	30,851	27,622	73.9	74.3	2,860	8,013	6,676	3,415	2,468
Duluth Missabe &	3 mos.	8,516	1,057	9,573	6,309	1,590	1,236	245	1,637	1,632	1,387	75	3,141	7,481	6,204	78.1	98.3	2,049	43	1,080	705	331–
Iron Range	12 mos.	41,921	4,311	46,232	43,833	6,828	5,901	562	6,936	6,587	2,193	276	12,666	31,137	28,533	67.3	65.1	11,058	4,038	4,426	5,782	7,025
Duluth, Winnipeg	3 mos.	3,427	10	3,437	2,776	1,554	361	19	560	261	2	142	930	3,259	1,788	94.8	64.4	374	197–	534	234	390–
& Pacific	12 mos.	13,029	121	13,150	10,866	3,114	1,437	65	1,466	938	9	340	4,176	9,376	6,715	71.3	61.8	1,298	2,480	2,530	1,812	767
Elgin, Joliet &	3 mos.	12,655	6,750	19,405	12,864	1,690	1,450	170	2,547	1,915	559	253	7,086	13,536	9,834	69.8	76.4	3,821	2,048	445–	1,852	35
Eastern	12 mos.	48,290	24,254	72,544	64,095	6,950	5,630	575	10,948	8,583	2,241	955	26,762	53,577	46,941	73.9	73.2	11,429	7,538	5,976	6,343	5,070
Erie Lackawanna	3 mos.	59,839	8,241	68,080	65,019	7,681	6,847	697	10,504	12,258	1,820	1,457	32,590	59,121	52,981	86.8	81.5	3,977	4,982	7,885	4,821–	2,314–
	12 mos.	233,020	30,574	263,594	268,548	28,995	27,816	3,186	44,522	46,166	7,254	5,694	126,427	223,169	212,269	84.7	79.0	20,582	19,843	36,178	23,541–	2,242–
Florida East Coast	3 mos.	11,596	329	11,925	10,317	58	3,858	340	945	902	306	242	3,141	5,201	7,520	43.6	72.9	2,231	4,493	2,096	3,128	1,952
	12 mos.	38,429	1,083	39,512	34,986	7,073	11,530	953	3,648	3,739	1,131	931	9,416	23,307	25,670	59.0	73.4	5,787	10,418	6,391	6,267	3,517
Fort Worth &	3 mos.	6,439	174	6,613	5,567	1,026	962	221	707	754	115	71	3,208	5,442	4,987	82.3	89.6	309	862	431	154–	890–
Denver	12 mos.	23,450	649	24,099	23,398	3,816	3,290	492	3,071	2,761	464	287	11,222	20,022	18,305	83.1	78.2	1,449	2,627	3,729	1,744–	718–
Georgia Railroad	3 mos.	2,682	114	2,795	2,897	380	441	22	690	377	152	117	1,432	2,769	2,071	99.1	71.5	151	125–	687	–	–
	12 mos.	10,812	377	11,189	12,575	1,545	1,734	104	1,973	1,579	438	460	4,727	9,286	8,620	83.0	68.6	620	1,283	3,360	–	–
Grand Trunk	3 mos.	1,926	114	2,040	2,035	4,146	2,771	254	3,733	3,320	156	517	11,566	21,713	18,465	90.6	87.0	2,176	78	791	7,318–	7,101–
Western	12 mos.	7,454	389	7,843	8,073	13,242	12,381	970	13,659	13,559	580	2,043	44,509	80,185	76,840	89.2	90.3	8,579	1,123	207	18,307–	22,097–
Green Bay &	3 mos.	29,933	1,034	23,967	21,231	379	328	20	317	260	50	144	762	1,749	1,563	85.74	76.81	177	113	343	3–	65
Western	12 mos.	86,555	3,333	89,888	85,112	1,361	1,166	98	1,189	1,015	209	559	2,895	6,606	6,058	84.23	75.04	662	575	1,059	14–	443
Illinois Central Gulf	3 mos.	105,172	7,206	112,378	111,467	16,603	17,000	947	17,936	20,052	5,272	3,404	45,360	89,494	90,002	79.6	80.7	11,997	10,887	12,979	16,833	8,502–
	12 mos.	446,297	27,807	474,104	460,711	72,691	66,872	7,481	83,090	83,971	21,127	13,985	178,179	375,181	357,834	79.1	79.7	44,927	53,996	62,037	37,624	18,466
Illinois Terminal	3 mos.	2,784	396	3,180	2,960	323	418	7	584	606	112	96	1,341	2,620	2,624	82.4	88.6	244	315	201	212	48
	12 mos.	10,810	1,580	12,390	12,355	1,508	1,464	61	1,933	1,865	379	390	4,799	9,673	9,217	78.1	74.6	906	1,812	2,240	832	1,121
Kansas City Southern	3 mos.	26,174	1,317	27,491	24,475	3,960	2,905	224	4,381	3,432	1,176	981	9,674	20,472	16,989	74.5	69.4	2,383	4,636	5,217	1,366	9,882–
	12 mos.	101,376	5,038	106,415	101,464	15,953	12,459	1,091	17,012	15,553	4,816	3,755	35,746	77,830	70,882	73.1	69.9	9,326	19,259	21,375	7,112	3,472–
Lake Superior &	3 mos.	1,114	553	1,666	1,355	268	272	64	478	378	182	9	612	1,524	1,382	91.4	101.9	90	53	200–	180	101–
Ishpeming	12 mos.	3,661	1,793	5,454	5,551	1,074	1,096	249	1,729	1,443	727	33	2,054	5,424	5,098	99.5	91.9	593	563–	300–	131–	138
Lehigh Valley	3 mos.	13,522	722	14,244	10,314	1,367	1,471	127–	3,342	1,674	228	447	7,003	13,079	9,984	91.8	92.0	1,074	91	37–	6,349–	2,842–
	12 mos	49,161	1,968	51,129	45,459	6,831	6,031	1,181	11,414	8,360	1,355	1,678	23,946	47,787	40,702	93.5	89.5	4,328	986–	883	17,693	7,957–
Long Island	3 mos.	1,598	14,856	16,895	24,189	3,851	4,511	329	5,327	7,605	987	150	16,087	29,879	35,416	176.9	146.4	1,356	14,340–	12,940–	12,001–	15,165–
	12 mos.	8,637	85,478	94,115	96,092	18,535	18,361	1,177	29,826	29,841	4,465	584	71,342	138,507	133,289	147.2	138.7	6,862	51,254–	44,195	55,483	52,629
Louisville &	3 mos.	115,724	2,680	118,404	109,886	16,468	17,711	1,896	23,331	24,084	7,903	2,535	46,391	93,886	89,083	79.3	81.1	6,268	18,249	14,346	8,389	3,296
Nashville	12 mos.	447,506	10,973	458,478	443,269	62,425	70,493	6,246	91,436	89,325	31,612	9,746	173,223	359,796	352,785	78.5	79.6	31,034	67,649	61,405	29,002	431–
Maine Central	3 mos.	6,993	114	7,107	6,830	1,593	1,628	100	1,496	1,550	289	127	2,656	6,348	6,139	89.3	89.9	530	228	205	263	107–
	12 mos.	27,713	496	28,209	28,589	6,406	5,828	373	6,165	6,017	1,148	525	10,307	25,206	23,877	89.4	83.5	2,165	838	2,688	124	1,321
Missouri Illinois	3 mos.	1,883	46	1,930	1,644	303	293	2	672	723	338	57	435	1,558	1,529	80.7	93.0	289	82	387–	872	477
	12 mos.	7,564	103	7,667	7,277	1,318	1,236	40	2,843	2,749	1,361	217	1,683	6,403	6,041	83.5	83.0	1,837	574–	833–	2,705	2,373
M-K-T Lines	3 mos.	19,427	688	20,115	19,091	2,862	2,236	336	2,698	2,726	311	925	8,221	15,653	13,571	77.8	71.1	1,333	3,128	4,164	1,027–	936
	12 mos.	76,265	2,703	78,968	74,208	10,944	10,932	1,603	10,190	9,452	1,319	3,691	30,804	59,416	54,115	75.2	72.9	5,736	13,816	14,669	2,560–	21
Missouri Pacific	3 mos.	113,320	4,432	117,752	109,834	18,291	17,707	2,212	19,211	16,595	4,294	2,605	45,093	90,225	80,843	76.6	73.6	7,125	20,402	22,960	4,885	1,136–
	12 mos.	434,616	16,465	451,081	421,855	71,671	63,021	7,275	77,624	70,582	16,768	10,281	164,708	343,797	311,377	76.2	73.8	29,154	78,130	83,551	16,786	9,862

Fourth Quarter and Twelve Months' Figures of Calendar Year 1972

(Dollar figures are stated in thousands: i.e., with last three digits omitted)

Name of Road		Operating Revenues: Freight	Other	Total 1972	Total 1971	Operating Expenses: Maint. of Roadway and Structures: Total 1972	Total 1971	Deprec. and Retirements	Maint. of Equipment: Total 1972	Total 1971	Deprec. and Retirements	Traffic	Transportation	Total 1972	Total 1971	Operating ratio: 1972	1971	Railway tax accruals	Railway operating income: 1972	1971	Net income: 1972	1971
Monongahela	3 mos.	1,769	9	1,777	1,064	418	246	163	263	137	20	3	455	1,184	659	66.6	61.9	138	456	328	296–	453–
	12 mos.	8,335	44	8,379	6,263	1,953	1,315	608	1,152	612	79	11	1,861	5,205	3,516	62.1	56.1	502	2,672	2,468	338–	722–
Norfolk & Western	3 mos.	195,276	7,328	202,704	158,092	25,422	18,835	2,945	35,304	32,628	13,345	4,350	67,824	143,644	125,419	70.9	79.3	16,449	46,611	27,342	25,665	11,291
	12 mos.	765,347	29,663	795,010	727,620	93,143	83,296	11,198	141,338	135,059	53,209	16,849	272,599	565,836	527,588	71.2	72.5	71,012	158,162	140,295	32,150	63,187
Norfolk Southern	3 mos.	3,852	111	3,963	3,672	775	706	98	624	594	179	155	1,366	3,222	2,945	81.3	80.2	251	490	529	90	201
	12 mos.	15,041	321	15,362	14,392	3,044	2,681	334	2,415	2,309	717	654	5,428	12,778	11,412	83.2	79.3	1,091	1,493	1,975	19	729
Northwestern Pacific	3 mos.	3,472	12	3,484	3,068	778	1,488	86	437	93	2	32	107	2,387	2,752	68.5	89.7	133	964	115	439	33–
	12 mos.	14,040	40	14,080	12,170	3,426	3,896	265	749	328	8	1,014	4,038	8,872	–	63.0	70.9	1,301	3,907	2,661	2,361	1,436
Oregon Electric	3 mos.	1,604	161	1,765	1,880	275	108	79	35	88	–	7	647	1,012	859	57.3	45.7	295	458	680	57	261
	12 mos.	6,470	441	6,911	6,865	946	804	136	172	120	–	30	2,818	4,142	3,419	59.9	49.8	944	1,824	2,373	405	793
Penn Central	3 mos.	416,715	59,927	476,642	416,499	58,444	62,821	7,468	75,995	75,482	13,591	5,375	227,661	390,924	369,539	82.0	88.7	34,487	51,231	15,793	46,835–	364,615–
	12 mos.	1606,541	218,9151	,825,4561	,775,190	244,506	256,458	30,982	324,749	346,035	55,381	20,977	852,561	1,535,027	1,562,414	84.1	88.0	140,509	149,920	71,240	222,829–	560,153–
Penn-Reading Seashore Line	3 mos.	1,994	322	7,316	2,067	710	609	80	320	330	31	14	2,032	3,217	2,814	138.9	136.2	185	1,068–	924–	1,828–	1,621–
	12 mos.	7,852	1,191	9,044	9,044	2,273	2,185	264	1,322	1,220	128	63	6,981	11,184	10,162	123.7	114.1	736	2,877–	1,953–	5,690–	4,594–
Pittsburgh & Lake Erie	3 mos.	8,933	478	9,412	6,663	1,124	1,357	174	3,370	4,154	1,628	194	3,802	9,189	9,300	97.6	139.6	838	616–	1,877–	2,985	715
	12 mos.	35,545	1,986	37,532	33,615	5,415	5,607	470	15,605	15,452	6,561	740	15,091	39,684	38,341	105.7	104.7	3,334	5,487–	8,233–	9,195	10,078
Reading	3 mos.	23,534	5,643	29,177	24,139	3,789	3,870	908	5,019	4,756	1,212	745	13,796	25,315	23,644	86.7	97.9	2,295	1,566	1,771–	2,933–	6,946–
	12 mos.	90,239	20,911	111,150	112,904	17,072	16,904	2,667	21,733	20,182	4,952	2,887	53,090	102,756	98,379	92.4	87.1	10,445	2,050–	4,009	20,083–	11,549–
Richmond, Fredericksburg & Potomac	3 mos.	8,169	399	6,568	5,686	852	837	122	1,044	837	251	120	1,625	4,117	3,219	62.7	56.6	1,518	933	977	1,143	272–
	12 mos.	23,730	1,463	25,193	25,219	3,160	3,020	491	3,416	3,417	990	435	5,988	14,599	14,691	57.9	58.3	5,666	4,928	4,735	9,302	3,869
St. Louis-San Francisco	3 mos.	57,280	2,428	59,708	53,951	8,542	7,047	999	9,106	8,056	2,484	1,760	22,805	44,816	40,466	75.1	75.0	4,031	10,860	9,277	3,976	3,238
	12 mos.	221,264	8,429	229,693	212,820	34,661	29,030	3,369	36,058	33,164	9,875	7,164	86,669	176,175	158,766	76.7	74.6	17,191	36,328	37,095	14,340	13,200
St. Louis Southwestern	3 mos.	38,539	485	39,024	37,562	5,455	4,355	1,550	9,783	8,902	3,210	911	15,112	32,166	28,438	82.3	75.7	1,534	5,324	8,009	8,461	9,392
	12 mos.	150,451	1,822	152,272	143,801	19,344	15,686	2,438	35,799	28,178	12,585	3,607	54,174	116,608	97,440	76.6	67.7	12,780	22,885	27,740	31,827	34,071
Seaboard Coast Line	3 mos.	140,576	4,894	145,470	130,129	20,805	19,945	722	25,624	23,680	6,450	3,193	54,458	110,699	99,042	76.1	76.1	11,086	23,685	21,001	14,332	6,538
	12 mos.	546,633	16,503	563,136	530,254	82,499	76,769	6,298	100,218	95,345	25,870	12,404	201,390	420,662	394,291	74.7	74.4	46,132	96,342	92,037	50,606	11,145
Soo Line	3 mos.	37,788	794	38,582	32,389	6,855	6,456	915	4,963	4,643	1,020	924	13,315	27,436	25,070	71.1	77.4	4,081	7,065	4,813	3,022	1,483
	12 mos.	137,509	3,142	140,651	124,478	24,231	21,966	1,894	18,394	17,245	4,041	3,627	50,446	102,409	92,256	72.8	74.1	14,137	24,104	20,492	10,264	7,678
Southern Railway	3 mos.	115,040	4,081	119,121	110,867	21,958	24,192	1,671	22,222	21,121	7,702	2,551	39,069	91,936	84,480	77.2	76.2	6,367	20,818	21,268	12,495	17,565
	12 mos.	455,931	15,698	471,629	423,392	79,694	71,167	6,135	85,727	77,861	28,203	9,603	145,476	343,544	306,321	72.8	72.3	37,064	91,020	76,325	59,621	58,740
Alabama Great Southern	3 mos.	12,308	368	12,676	11,792	1,707	2,343	25	2,585	2,287	949	270	3,614	8,769	8,858	69.2	75.1	1,136	2,772	2,396	1,608	1,817
	12 mos.	48,233	1,571	49,804	45,606	7,722	8,239	918	9,581	8,514	3,675	1,022	13,577	34,261	32,368	68.8	71.0	3,885	11,658	9,053	8,185	7,112
Cinn. New Orleans & Texas Pacific	3 mos.	19,522	673	20,195	17,556	1,944	2,095	258	3,771	4,027	1,529	415	5,083	11,989	12,271	59.4	69.9	1,917	6,289	4,812	4,154	3,029
	12 mos.	73,742	7,762	76,265	66,569	8,544	8,244	886	14,945	14,431	6,303	1,512	19,603	47,725	44,448	62.6	66.8	8,805	19,735	15,246	12,944	10,183
Georgia Southern & Florida	3 mos.	5,953	148	6,101	5,815	1,150	877	42	664	589	231	120	1,618	3,774	3,250	61.9	55.9	313	2,014	2,305	794	927
	12 mos.	21,369	574	21,943	20,236	3,175	3,770	172	2,503	1,991	877	433	5,886	12,858	12,165	58.6	60.1	1,102	7,983	6,980	3,008	2,350
Southern Pacific	3 mos.	283,437	7,470	291,157	269,214	37,956	41,221	3,688	52,904	52,384	15,548	4,679	111,120	220,754	211,093	75.8	78.4	25,271	45,131	37,193	31,546	17,807
	12 mos.	1,092,275	27,6541	,119,9301	,028,705	150,704	140,572	12,892	208,502	203,495	61,546	17,606	423,465	861,600	804,842	76.9	78.2	96,236	162,094	130,049	93,080	77,544
Texas & Pacific	3 mos.	28,171	903	29,074	26,526	4,144	4,456	382	5,082	4,633	1,505	1,015	11,687	23,074	21,400	79.4	80.7	1,523	4,477	3,737	2,697	93
	12 mos.	104,712	3,721	108,433	103,492	16,525	15,661	1,455	20,414	18,682	6,004	4,010	42,405	87,821	81,973	81.0	79.2	6,435	14,177	15,097	7,485	5,201
Toledo, Peoria & Western	3 mos.	2,694	129	2,823	2,836	332	308	12	305	316	27	224	1,097	2,166	2,106	76.7	74.2	221	437	515	129	232
	12 mos.	10,960	473	11,433	10,928	1,501	1,670	59	1,143	1,100	273	896	4,168	8,589	8,286	75.1	75.9	1,021	1,815	1,644	609	718
Union Pacific	3 mos.	196,772	7,572	204,343	185,869	26,122	21,479	2,630	33,484	33,316	14,159	4,895	70,929	149,897	130,287	73.4	70.1	19,692	34,754	36,895	42,863	33,783
	12 mos.	743,754	25,869	769,623	691,571	97,962	85,506	9,114	144,527	134,120	55,285	18,622	264,477	567,162	516,609	73.7	74.7	71,613	130,848	103,924	122,941	31,560
Western Maryland	3 mos.	11,882	718	12,600	9,166	1,490	2,114	214	2,537	2,871	845	446	4,825	10,136	10,541	80.4	115.0	705	1,759	1,916–	257–	3,580–
	12 mos.	45,754	3,126	48,880	50,452	6,978	8,228	898	10,733	12,366	3,561	1,790	19,168	42,033	45,162	86.0	89.5	3,263	3,584	2,015	630–	3,312–
Western Pacific	3 mos.	23,038	264	23,302	20,815	3,277	3,232	293	3,703	3,797	858	931	9,198	18,895	18,719	81.1	89.9	1,607	2,800	657	1,205	674–
	12 mos.	85,498	2,536	88,035	83,719	12,846	12,171	1,263	14,986	14,723	3,547	3,599	34,126	72,377	68,947	82.2	82.4	6,354	9,304	8,655	3,898	2,260

NOTE: $000– indicates deficit.

Market Outlook

CARLOADINGS

Loadings of revenue freight in the week ended April 21 totaled 511,056 cars, according to the Association of American Railroads. This was a decrease of 8,511 cars, or 1.6%, compared with the previous week, and an increase of 6,060 cars, or 1.2%, compared with the corresponding week last year. Ton-miles generated by carloadings in the week ended April 21 are estimated at 15.6 billion, an increase of 4.1% above the corresponding week of 1972.

REVENUE FREIGHT CARLOADINGS

Commodity	April 21 week	Apr. 14 week
Grain	28,070	28,529
Farm products	9,500	9,736
Metallic ores	34,424	29,278
Coal	87,575	87,374
Crushed stone, gravel & sand	28,503	29,073
Nonmetallic minerals	14,223	15,273
Grain mill products	19,076	19,624
Food and kindred products	21,010	21,489
Primary forest products	23,198	24,501
Lumber & wood products (except furniture)	17,140	17,482
Pulp, paper & allied products	22,587	22,690
Chemicals & allied products	31,138	31,909
Petroleum products	8,405	9,074
Stone, clay & glass products	21,587	22,468
Coke	8,617	8,213
Metals & products	25,606	27,363
Motor vehicles & equipment	26,164	28,346
Waste & scrap materials	15,595	16,539
Forwarder & shipper assn. traffic	9,894	10,049
All other carloads	58,298	61,365
LCL traffic	446	403
Total cars loaded	**511,056**	**520,778**
Cumulative total, 16 weeks	1973	1972
	8,086,178	7,656,902
Estimated revenue ton-miles (billions) 16 weeks	251.6	232.0

PIGGYBACK LOADINGS

U.S. piggyback loadings for the week ended April 14 totaled 29,893 cars (18.1% above the corresponding week last year) and 51,922 trailers or containers (up 25.9% from 1972). Cumulative volume for the first 15 weeks of 1973 is 429,231 cars (up 19.5% from last year) and 737,546 trailers or containers (up 22.8% from 1972).

IN CANADA

7 days ending	Tons of Revenue Freight	Cumulative Totals
April 14, 1973	4,717,368	62,472,730
April 14, 1972	4,097,327	54,476,338

● *Illinois Central Gulf.*—Ordered 300 100-ton covered hopper cars from Pullman-Standard at a cost of $5.5 million.

● *Chicago & North Western.*—Ordered 1,200 70-ton, 50-ft box cars at a cost of more than $20 million. Pullman-Standard and ACF will each build 600 cars, with deliveries from P-S scheduled to begin in September and from ACF in October. All cars will be equipped with cushion underframe and 10-ft doors.

● *CP Rail.*—Ordered 200 66-ft, 100-ton bulkhead flat cars from Marine Industries, Ltd., at an approximate cost of $4.3 million. Delivery is scheduled for next August-September. They will be placed in lumber service between Canada and the U.S.

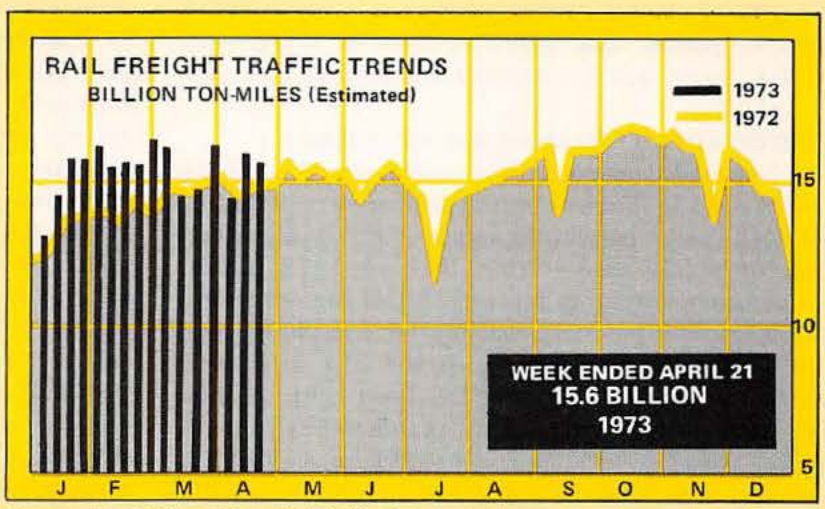
● *Massachusetts Bay Transportation Authority and San Francisco Municipal Railway.*—Ordered 230 light-rail vehicles at a cost of $69 million from the Boeing Vertol Co. of Philadelphia; 150 will be for Boston and 80 for San Francisco.

● *Soo Line.*—Will acquire 415 freight-train cars and eight 3,000-hp, six-axle diesel locomotives at an estimated cost of $11.3 million as part of its 1974 new equipment program. Deliveries could begin as early as the fourth 1973 quarter.

● *South African Railways.*—Ordered 100 1,500-hp branch-line diesel locomotives from General Motors South African Pty. Twenty-five of the units will be built at LaGrange, Ill., and 75 at GM's plant in Port Elizabeth, South Africa.

● *Southern.*—Ordered 24 SD40 locomotives from Electro-Motive at a cost of approximately $10 million.

● *World Bank Group.*—Has approved two loans and a credit for railroad projects in three countries. WBG is lending $47 million for a $223-million equivalent first-stage rehabilitation and modernization program of the Turkish State Railways. A $15-million loan was approved for a $69.3-million equivalent project to modernize and increase the capacity of the State Railway of Thailand. A $6.7-million credit was approved for a $9.3-million equivalent project in Mali to rehabilitate the Bamako-Diboli railway line and purchase locomotives and cars. (The Mali transaction complements earlier WBG assistance to Senegal to improve its Dakar-Diboli line.)



Source: Association of American Railroads

Moving People

TORONTO WILL GET GERMAN MAGLEV SYSTEM

Magnetic levitation, viewed by many as the surface transportation mode of the future, has scored its first big breakthrough in North America. The government of Ontario has announced that an "intermediate capacity public transit system" based on the Transurban maglev technology developed by Krauss-Maffei of Munich (RA, April 9, p. 27) will be installed at Toronto.

THIRD AUTO-TRAIN PLANNED

Auto-Train Corp. President Eugene K. Garfield told shareholders May 2 that a third auto-train will be added between Lorton, Va., and Sanford, Fla., "on or about June 30." The expansion is made possible, he said, by a 12-year, $2.5-million lease which Auto-Train executed with United States Railway Equipment Co. for 41 enclosed Canadian National auto-carriers. Garfield said plans are already under way for a fourth train to meet growing demands.

CURTAIN RISES ON ACT-1

A standing-room-only audience was on hand at the American Transit Association's Rail Transit Conference in Chicago April 24 when the curtain was raised on ACT-1, the $2-million UMTA-sponsored project aimed at establishing new standards of rapid transit vehicle designs. Under the direction of the Boeing Vertol Co., of Philadelphia, four industry teams developed (and presented at the ATA conference for the first time) their concepts of the rapid concept vehicle of the future. Participating in the ACT-1 project (for Advanced Train Concept-Phase 1) were: Garrett-AiResearch; General Electric; Rohr; and Vought. Under Phase 2 of the project, one or more of the firms will be selected to build and test prototype cars. Eventually, demonstration runs of the prototypes will be made in key U.S. cities. It has been estimated that 7,000 vehicles of the general ACT-1 design will be required in the next 10 years.

NTSB GO-AHEAD FOR MORE ICG HIGHLINERS

The National Transportation Safety Board, after its analysis of the Illinois Central Gulf rear-end collision between two commuter trains in Chicago last October which killed 45 (RA, Nov. 13, 1972, p. 11), has recommended that replacement of the remaining old-style multiple-unit coaches be completed. An UMTA grant for two-thirds of the cost of the 15 additional bi-level Highliners has been held up since February awaiting any safety recommendations resulting from the accident investigations. NTSB has also recommended certain structural changes in the new cars.

PEOPLE-MOVER FOR JACKSONVILLE?

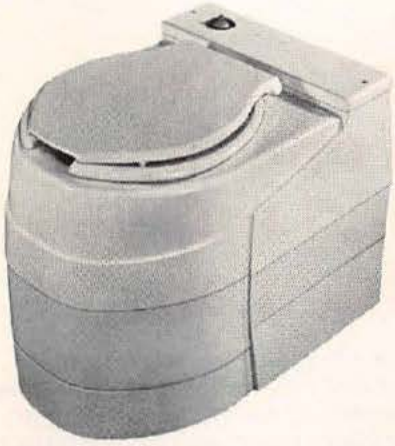
The final report of the transit study for Jacksonville, Fla., has recommended rubber-tired 30-passenger vehicles on concrete guideways be used in the downtown area and that they connect with parking garages on the outskirts of the central business district. Three Jacksonville agencies and the Florida Department of Transportation sponsored the study by Daniel, Mann, Johnson & Mendenhall of Los Angeles and Reiff-Fellman Associates of Miami. A 10-cent fare has been recommended.

DESIGN MANUAL COMPLETED BY IRT

Guidelines and Principles for Design of Rapid Transit Facilities, an 84-page manual prepared by the Subcommittee on Design Standards of the Institute for Rapid Transit, is now available at a price of $5.00. Robert M. Coultas, executive vice president of IRT, reports that this reference work will be valuable to all those planning for new rapid transit lines. In addition to general guidelines for such topics as patron circulation, security, ventilation, acoustics, security, concessions and waterproofing, the appendix indicates types of standards already in existence on operating transit properties. The volume is available from IRT at 1612 K Street N.W., Washington, D.C. 20006.

LINDSAY PLAN WOULD CUT N.Y. FARES

As Mayor John Lindsay figures it, New York City's commuter rail, subway and bus operations will run up deficits totaling $327 million in 1974—which he fears will mean a 55-cent transit fare (compared with the present 35 cents) plus substantial rail-commuter fare increases. On April 29 Mayor Lindsay unveiled a plan that would, instead, roll back the transit fare to 25 cents and cut commuter fares by 30%. He would create a regional governmental body to handle the Metropolitan Transportation Authority's financial affairs, while leaving policy and operating decisions to MTA and its subsidiaries. Ideally, this body would finance its fare reduction program with a substantial chunk of the Federal operating aid now being contemplated by Congress. If this failed, a Metropolitan Transportation District would be created and authorized to levy a payroll tax in the city and in surrounding counties. Lindsay conceded that the establishment of the MTA "has led to more unified direction of the mass transportation system," but he said it "has done little to end the current fiscal crisis." Lindsay added: "The time has come to recognize that a healthy system of mass transit is vital...The problem of financing mass transit is a regional problem."



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Thompson A. Nooner, manager of marketing, **Cleveland Transit System,** has been named the first marketing manager, **Washington (D.C.) Metropolitan Area Transit Authority.** Mr. Nooner is a former general manager, Genecast Division, General Railway Signal Corp. and also served as vice president, Railway Progress Institute.

Seymour Kashin has been appointed to the newly established position of vice president-transportation management services, Transit Systems Division, **Keene Corp.** Mr. Kashin will be responsible for revenue control and processing product lines for the transportation industry.

William S. Allison has been appointed executive officer for operations, **Metropolitan Transportation Authority,** New York.

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Viewpoint

Amtrak: Here to stay—and grow

Amtrak continues to be depicted by its enemies (and, sad to say, by some of its friends) as an ailing, awkward enterprise with one foot in the grave and the other in its mouth. This issue's cover story will, we hope, help to correct that picture.

Amtrak's ridership is up; its losses are down; it has a capital investment program for FY 1974 bigger than that of most Class I railroads. The 13 contracting railroads are operating more Amtrak trains than they did two years ago. There is, obviously, considerable merit in President Roger Lewis's claim that the Amtrak experiment can now be pronounced a success. He is not unaware of the mountain of problems that Amtrak still must tunnel through. Poor on-time performance is a source of great worry (though it must be remembered that a train is late when it is five minutes off schedule; a plane is not late until it has missed its schedule by 15 minutes). And the 13 railroads which Mr. Lewis deals with are not always anxious to take the extra step toward better service. A patient, tough bargainer, Mr. Lewis is working hard behind the scenes to correct this.

As for Amtrak's future, Mr. Lewis has good reason to be optimistic, based on the recent findings of a Harbridge House study. The study found, in the first place, that rail service is already far more important in the national picture than that well-worn statistic—that rail accounts for less than 1% of all intercity passenger travel—would indicate. That statistic, suggests Harbridge House, is misleading because the total transportation market includes many areas which have no rail service at all. Considering only those market areas served by rail, the rail share rises to 5.9%. In the New York-Washington corridor, the rail share is 18.6%.

As for the future, Harbridge House made these points:

—Over-all travel demand is rising. DOT foresees a 105% increase in commercial travel during the present decade, from 195 billion passenger miles in 1970 to 400 billion in 1980; and a further doubling in the following decade.

—The ability of autos and buses to cope with this demand will be constrained by a slowdown in construction of new highways and arterial roads due to greater public awareness of the high economic and social costs. Meanwhile, airports are approaching capacity and air congestion problems are worsening.

—It has been demonstrated by the Metroliner that improved rail service will bring riders back to the rails. Public attitudes also favor rails. A Louis Harris & Associates survey found that the public, by an 82-10% majority, feels it must have the rail option.

(There is evidence that even unimproved service will bring riders back to the rails. The New York Times recently reported that 100 people a day are now riding trains between New York and Montreal on a newly-restored service, though that service is far from ideal. That's one-tenth as many people as the airlines carry between those two points daily. Which may be one reason why Eastern Airlines last week introduced air shuttle service on the run.)

"RIDERSHIP WILL INCREASE..."

Harbridge House concluded: "Rail ridership will increase as the ability of other modes to grow is subjected to an increasing number of constraints resulting in a corresponding deterioration in quality of service"

Amtrak seems to be here not only to stay—but to grow.

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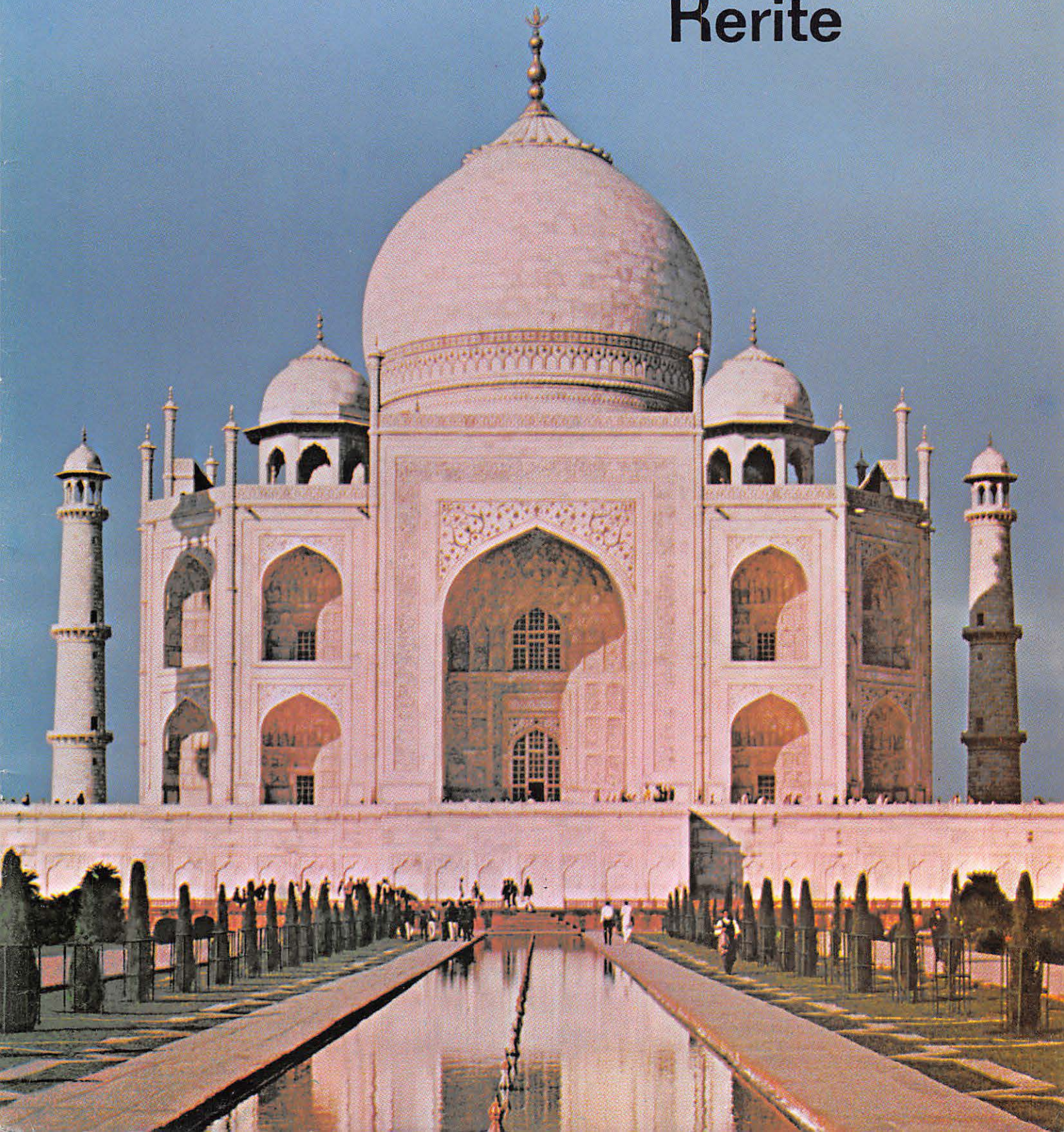

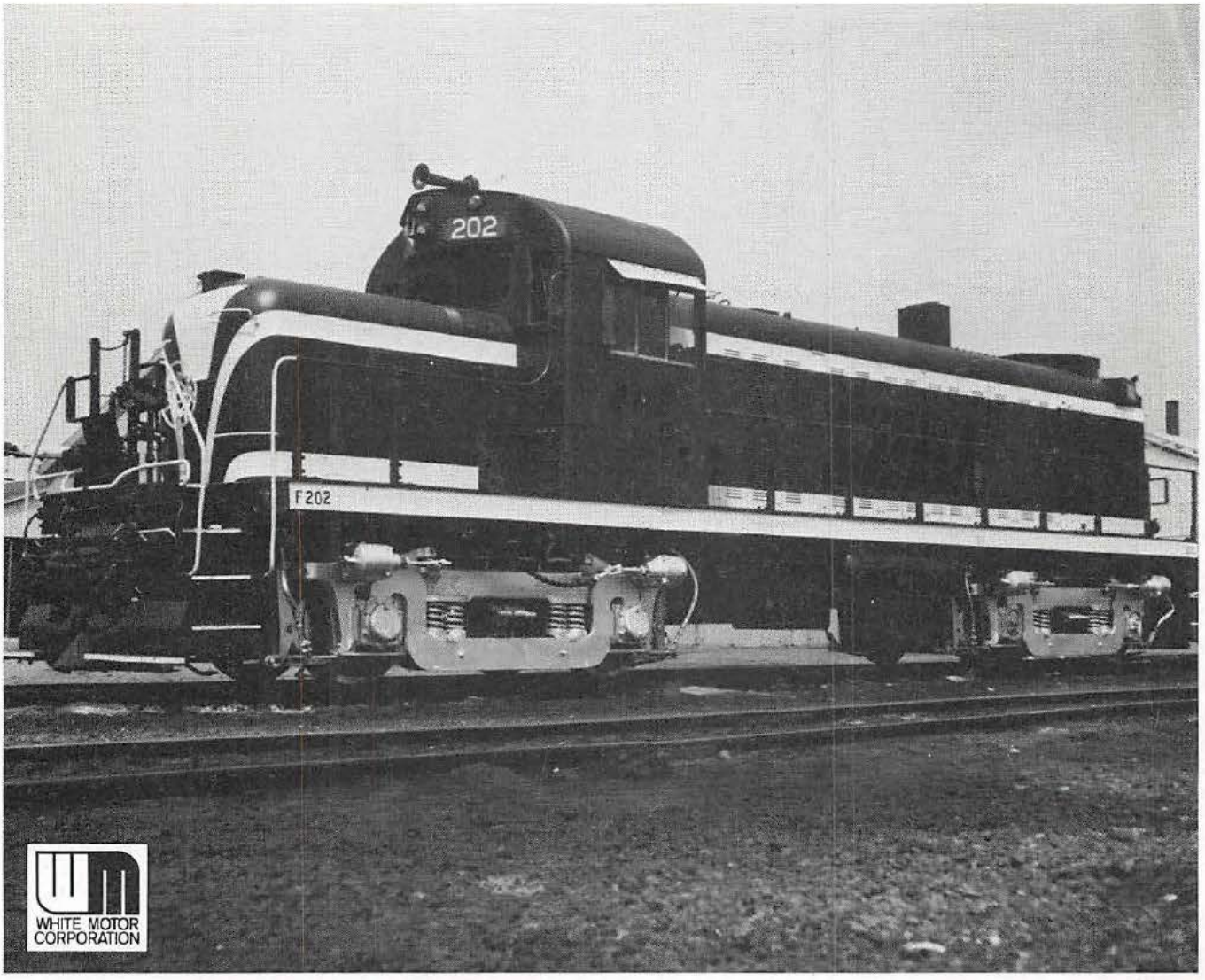

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